DVP-C660/C670D/C675D

RMT-D119A/D121A/D1210

SERVICE MANUAL

US Model
Canadian Model
DVP-C660/C670D
E Model
Australian Model
DVP-C670D
PX Model
DVP-C675D

Self Diagnosis Supported model

Photo: DVP-C670D

SPECIFICATIONS

CD/DVD player

Laser: Semiconductor laser

Signal format system
- NTSC (C660/C670D: US, Canadian/C675D)
- NTSC/PAL (C670D: Australian, E)

Audio characteristics

Frequency response
- DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1 dB)* (C660)
- DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB) (C670D: Australian, E)
- DVD (PCM 96 kHz): 2 Hz to 44 kHz (±0.5 dB) (C670D: US, Canadian/C675D)
- DVD (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)
- CD: 2 Hz to 20 kHz (±0.5 dB)

Signal-to-noise ratio
- More than 110 dB (AUDIO OUT connectors only) (C660/C670D: Australian, E)
- More than 115 dB (AUDIO OUT connectors only) (C670D: US, Canadian/C675D)

Harmonic distortion
- Less than 0.0025% (C670D: US, Canadian/C675D)
- Less than 0.003% (C660/C670D: Australian, E)

Dynamic range
- More than 100 dB (DVD)
- More than 97 dB (CD) (C660D/C670D: Australian, E)
- More than 98 dB (CD) (C670D: US, Canadian/C675D)

Wow and flutter
- Less than detected value (±0.001% W PEAK)

Outputs/Inputs

	Jack type	Output/input level	Load impedance
AUDIO OUT (1, 2)	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
VIDEO OUT (1, 2)	Phono jacks	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT (1, 2)	4-pin mini DIN	Y: 1.0 Vp-p C: 0.286 Vp-p	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT (Y, P_B/B-Y, P_R/R-Y)	Phono jacks	Y: 1.0 Vp-p P_B/B-Y, P_R/R-Y: 0.7 Vp-p	75 ohms, sync negative 75 ohms
5.1CH OUTPUT (C670D/C675D)	Phono jack	2 Vrms (at 50 kilohms)	Over 10 kilohms
S-LINK (C670D: US, Canadian/C675D)	Mini jack	–	–
PHONES (C670D/C675D)	Phone jack	12 mW	32 ohms
MEGA CONTROL	Mini jack	–	–
AUDIO IN	Phono jack	2 Vrms	47 kilohms

General

Power requirements
- 120 V AC, 60 Hz (C660/C670D: US, Canadian)
- 220 V – 240 V AC, 50/60 Hz (C670D: Australian)
- 110 – 240 V AC, 50/60 Hz (C670D: E/C675D)

Power consumption
- 14 W (C660)
- 17 W (C670D: US, Canadian)
- 18 W (C670D: Australian, E/C675D)

Dimensions (approx.)
- 430 × 95 × 410 mm ($17 \times 3\,^3/_4 \times 16\,^1/_4$ in.) (w/h/d) incl. projecting parts (C660)
- 430 × 95 × 414 mm ($17 \times 3\,^3/_4 \times 16\,^3/_8$ in.) (w/h/d) incl. projecting parts (C670D/C675D)

Mass (approx.)
- 5.3 kg (12 lb 2 oz) (C660)
- 5.4 kg (11 lb 14 oz) (C670D/C675D)

Operating temperature
- 5 °C to 35 °C (41 °F to 95 °F)

Operating humidity
- 25 % to 80 %

Supplied accessories

- Audio/video connecting cord (1) (C660/C670D: Australian, E)
- Audio/video/S-link connecting cord (1) (C670D: US,Canadian/C675D)
- S video cord (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- Plug adaptor (1) (C670D: E/C675D)

** The signals from AUDIO OUT connectors are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency).*

Design and specifications are subject to change without notice.

DVD VIDEO COMPACT disc DIGITAL VIDEO **CD/DVD PLAYER**

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

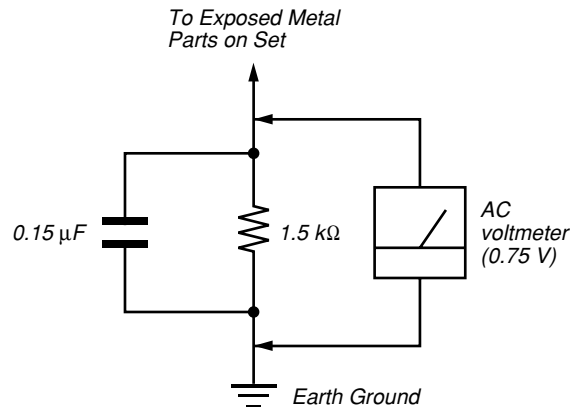


Fig. A. Using an AC voltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

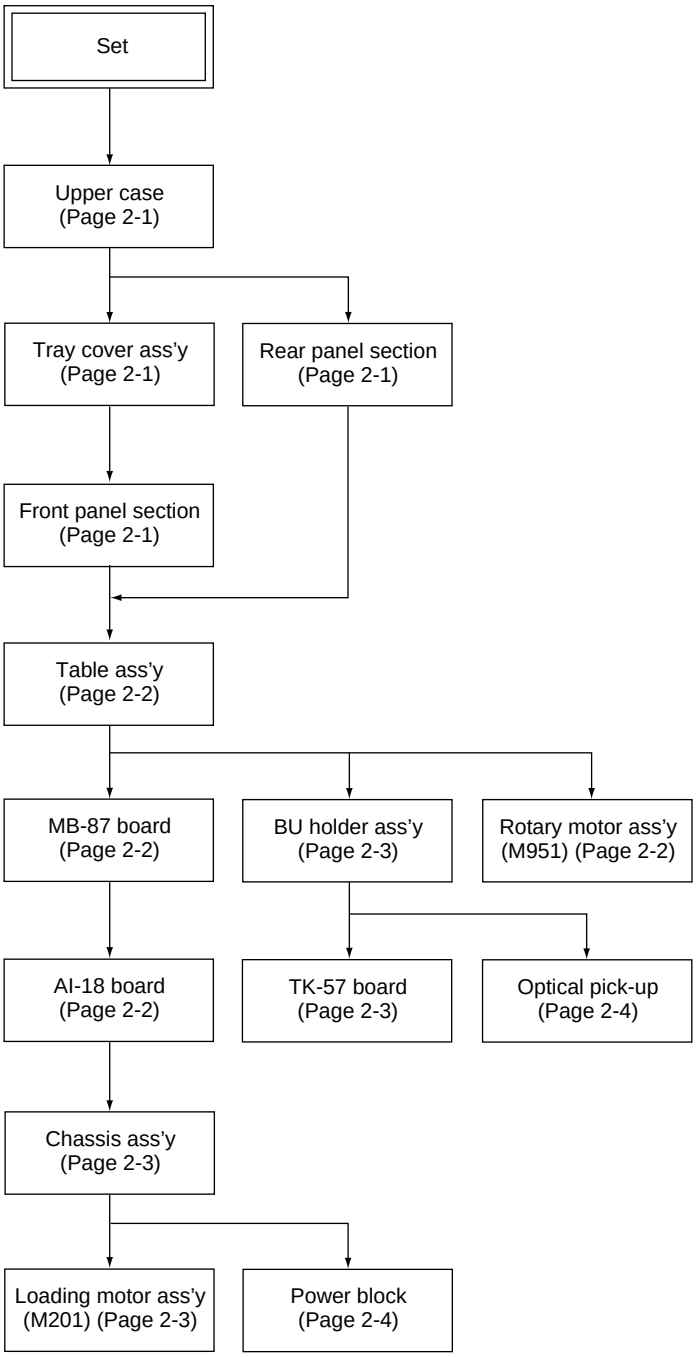
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.



2. NOTE ON REMOVE THE UPPER CASE

1) Remove seven tapping screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the upper case as lift in the direction of arrow.

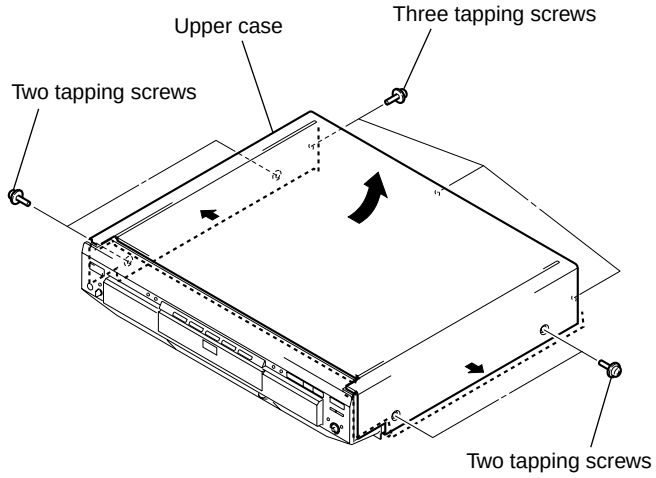


Fig. 1

3. DISC REMOVAL PROCEDURE

1) Insert a flat-blade screwdriver into a hole at the bottom, and rotare the cam gear in the direction of arrow Ⓐ. (See Fig. 2)

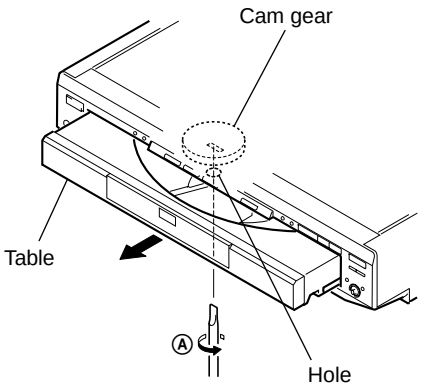


Fig. 2

4. NOTE ON MOUNTING GEARS

1) Mount the gear (U/D). (See Fig. 3.)
2) Rotate the gear (U/D) in the direction of arrow. (down position) (See Fig. 3.)

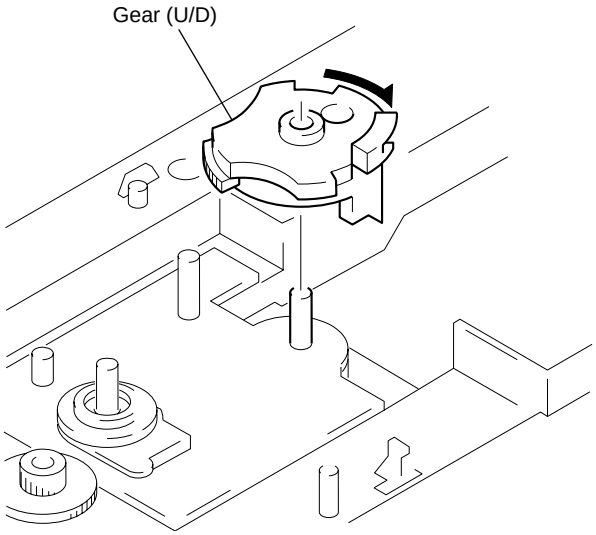


Fig. 3

3) Align triangle marks of the rotary encoder. (See Fig. 4.)
4) Escape the set lever. (See Fig. 4.)
5) Connect the boss of the gear (main) with the groove of the rotary encoder and mount the gear (main). (See Fig. 4.)

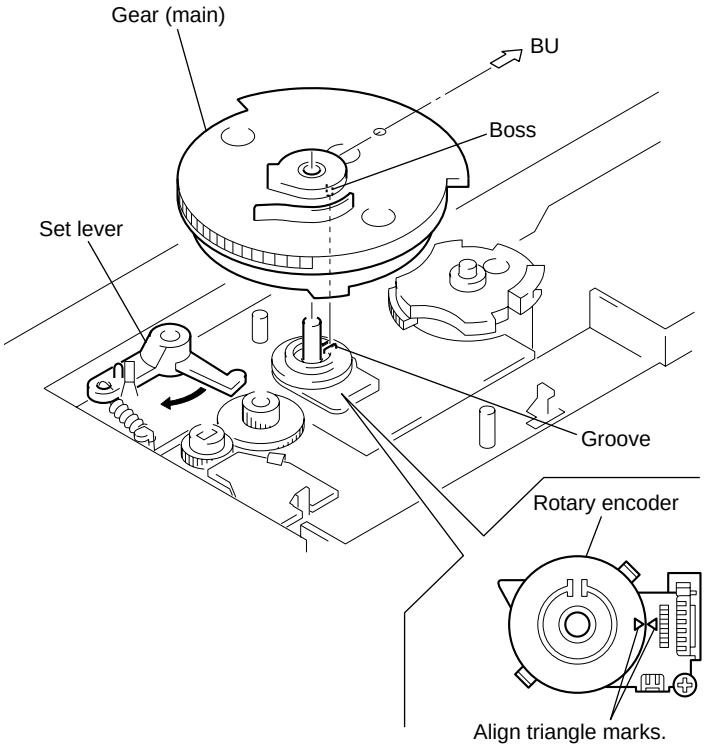


Fig. 4

6) Mount the lock lever (See Fig. 5.)
7) Mount the spring (lock lever). (See Fig. 5.)

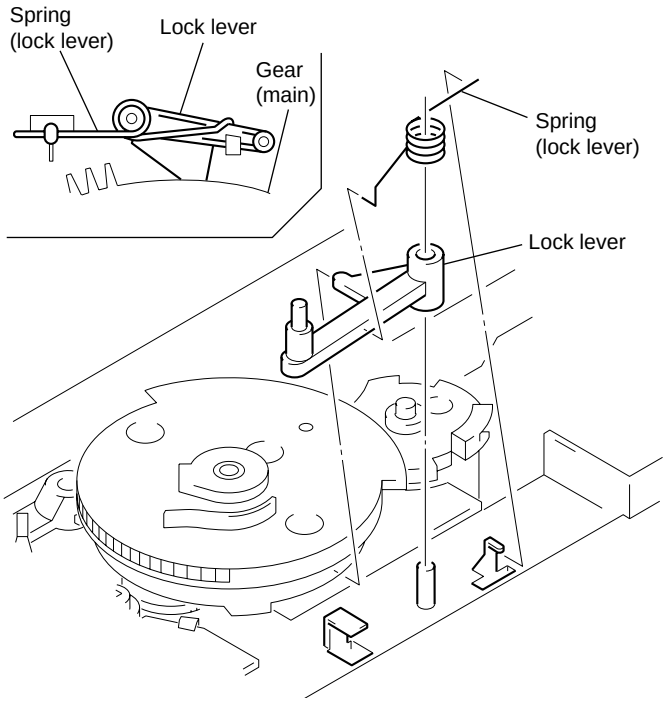


Fig. 5

8) Rotate the gear (main) in the direction of arrow Ⓐ by 90° turn. (Gear (U/D) is up position.) (See Fig. 6.)
9) Mount the Gear (rev). (See Fig. 6.)
10) Fix three stopper washers on the groove of shafts. (See Fig. 6.)

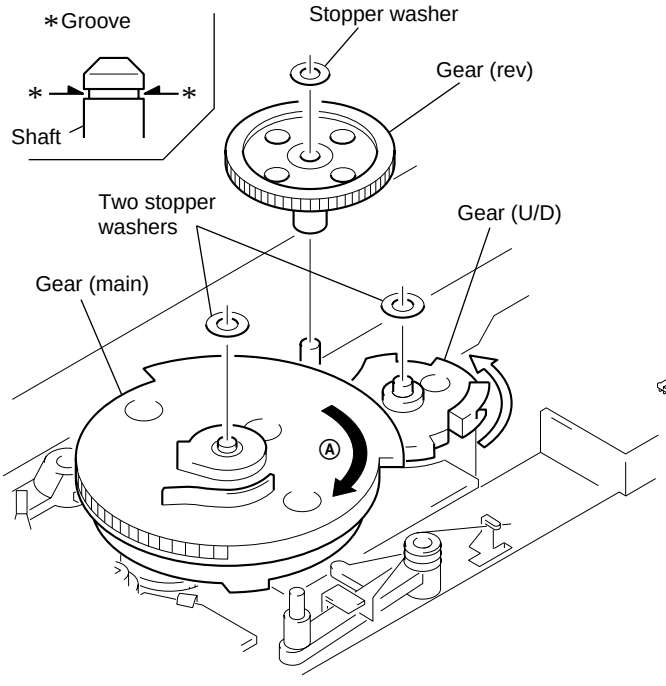


Fig. 6

5 HOW TO SERVICE MB-87 BOARD

1) Remove the upper case from the set. (Refer to 2-1)
2) Remove the tray cover ass'y. (Refer to 2-2)
3) Remove the front panel section. (Refer to 2-3)
4) Remove the table ass'y. (Refer to 2-5)
5) Remove the MB-87 board. (Refer to 2-7)
6) Remove the BU holder ass'y. (Refer to 2-11)
7) Set the jig (J-6090-102-A) as shown in Fig. 1.

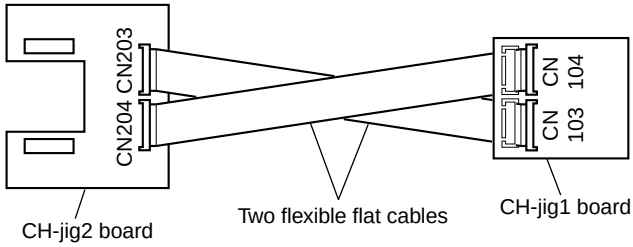


Fig. 1

8) Set the CH-jig1 board as shown in Fig. 2.

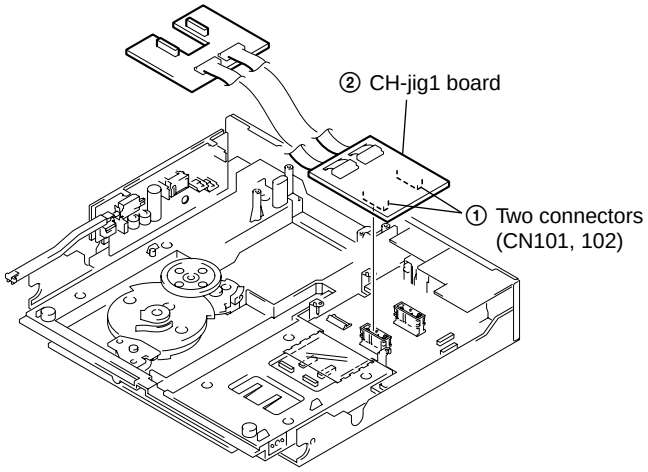


Fig. 2

9) Set the MB-87 board as shown Fig. 3.

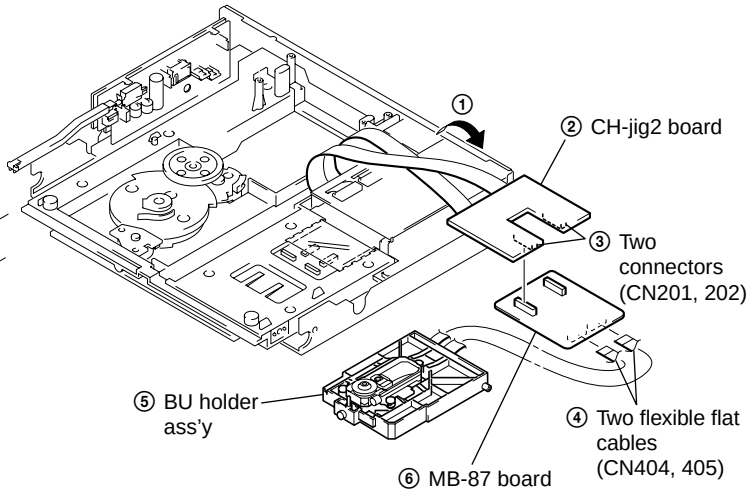


Fig. 3

SECTION 1
GENERAL

This section is extracted from instruction manual. (3-062-342-11)

About This Manual

Conventions

• Instructions in this manual describe the controls on the player. You can also use the controls on the remote if they have the same or similar names as those on the player.
• The icons on the right are used in this manual:

Icon	Meaning
	Indicates that you can use only the remote to do the task.
	Indicates tips and hints for making the task easier.
DVD	Indicates that the function is for DVD VIDEOs.
VIDEO CD	Indicates that the function is for VIDEO CDs.
CD	Indicates that the function is for Audio CDs.

This Player Can Play the Following Discs

	DVD VIDEOs		VIDEO CDs		Audio CDs	
Disc logo	DVD VIDEO		COMPACT disc DIGITAL VIDEO		COMPACT disc DIGITAL AUDIO	
Contents	Audio + Video		Audio + Video		Audio	
Disc size	12 cm	8 cm	12 cm	8 cm	12 cm	8 cm (CD single)
Play time	About 4 h (for single-sided DVD)/ about 8 h (for double-sided DVD)	About 80 min. (for single-sided DVD)/ about 160 min. (for double-sided DVD)	74 min.	20 min.	74 min.	20 min.

The "DVD VIDEO" logo is a trademark.

This player conforms to the NTSC color system. You cannot play discs recorded in other color systems such as PAL or SECAM.

Region code of DVDs you can play on this unit

Your DVD player has a region code printed on the back of the unit and will only play DVDs that are labeled with identical region codes.

DVDs labeled ALL will also play on this unit.

If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen.

Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.

Note on playback operations of DVDs and VIDEO CDs

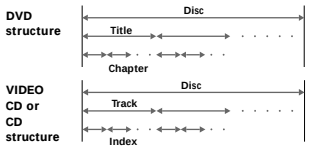
Some playback operations of DVDs and VIDEO CDs may be intentionally fixed by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs or VIDEO CDs.

Terms for discs

• Title
The longest section of a picture or music feature on a DVD, the movie, etc. in video software, or the name of an album in audio software.

• Chapter
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Each chapter is assigned a chapter number enabling you to locate the chapter you want. Depending on the disc, no chapters may be recorded.

• Track
Sections of a picture or a music feature on a VIDEO CD or a CD. Each track is assigned a track number enabling you to locate the track you want.



• Index (CD) / Video Index (VIDEO CD)
A number that divides a track into sections to easily locate the point you want on a VIDEO CD or a CD. Depending on the disc, no indexes may be recorded.

• Scene
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes." Each scene is assigned a scene number enabling you to locate the scene you want.

Note on PBC (Playback Control) (VIDEO CDs)

This player conforms to Ver. 1.1 and Ver. 2.0 of VIDEO CD standards. You can enjoy two kinds of playback according to the disc type.

Disc type	You can
VIDEO CDs without PBC functions (Ver. 1.1 discs)	Enjoy video playback (moving pictures) as well as music.
VIDEO CDs with PBC functions (Ver. 2.0 discs)	Play interactive software using menu screens displayed on the TV screen (PBC Playback), in addition to the video playback functions of Ver. 1.1 discs. Moreover, you can play high-resolution still pictures if they are included on the disc.

Discs that the player cannot play

The player cannot play discs other than the ones listed in the table on page 4. CD-Rs, CD-ROMs including PHOTO CDs, data sections in CD-EXTRAs, DVD-ROMs, DVD-audio, HD (high density) layer of Super Audio CD etc., cannot be played.

When playing DTS*-encoded CDs, excessive noise will be heard from the analog stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo outputs of the DVD player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel DTS Digital Surround™ decoder system must be connected to the digital output of the DVD player.

* "DTS," "DTS Digital Surround" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Precautions

On safety
• Caution – The use of optical instruments with this product will increase eye hazard.
• Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
• The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
• If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
• Should the AC power cord (mains lead) need to be changed, have it done at a qualified service shop only.

On placement
• Place the player in a location with adequate ventilation to prevent heat build-up in the player.
• Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
• Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.

On operation
• If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
• When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume
• Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning
• Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

IMPORTANT NOTICE
Caution: The enclosed DVD player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are especially susceptible to this.

Notes About the Discs

On handling discs
• To keep the disc clean, handle the disc by its edge. Do not touch the surface.
• Do not stick paper or tape on the disc.
If there is glue (or a similar substance) on the disc, remove the glue completely before using the disc.

• Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
• After playing, store the disc in its case.

On cleaning
• Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.

• Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

On novelty discs
• Do not use irregularly shaped CDs such as heart- or star-shaped CDs as they may cause the player to malfunction.

Getting Started

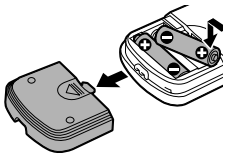
This section describes how to hook up the CD/DVD player to a TV (with audio/video input jacks) and/or an AV receiver (amplifier). You cannot connect this player to a TV which does not have a video input connector. Be sure to turn off the power of each component before making the connections.

Unpacking

Check that you have the following items:
• Audio/video/S-link connecting cord (1)
• S video cord (1)
• Remote commander (remote) RMT-D121A (1)
• Size AA (R6) batteries (2)
• Plug adaptor (1) (DVP-C675D only)

Inserting batteries into the remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the + and – ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor ▣ on the player.



You can control TVs and AV receivers (amplifiers) using the supplied remote
See page 70.

Notes
• Do not leave the remote in an extremely hot or humid place.
• Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
• Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
• If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Transporting the player

Before transporting the player, follow the procedure below to return the internal mechanisms to their original positions.

1 **Remove all the discs from the disc tray.**

2 **Press ⏏ to close the disc tray.**
Make sure that "NO DISC" appears on the front panel display.

3 **Wait for 10 seconds, then press I/⏻ on the remote, followed by ⏻ on the player.**
This will safely turn off the player.

TV Hookups

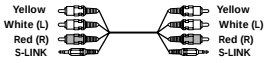
This connection is for listening to the sound through TV speakers (L: left, R: right). Refer to the instructions supplied with the component to be connected.

You can enjoy surround sound using your TV's built-in speakers

You can use 3D sound imaging to create virtual rear speakers from the sound of built-in TV speakers without using actual rear speakers (VES TV: Virtual Enhanced Surround TV). For details, see page 39.

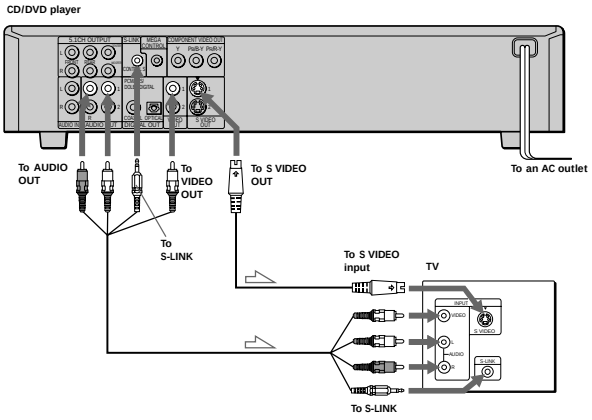
Required cords

Audio/video/S-link connecting cord (supplied) (1)



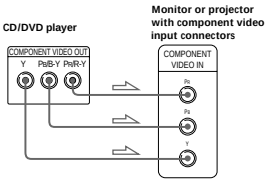
S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Yellow (video) to Yellow, Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.
If your TV has an S-link connector, you can control the CD/DVD player from the TV. Connect the TV via the S-LINK connector.
If your TV has an S video input connector, connect the component via the S VIDEO OUT connector using the supplied S video cord. You will get a better picture.
Refer to the instructions supplied with the TV to be connected.

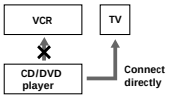


If you connect the player to a monitor or projector having component video input connectors that conform to output signals from the COMPONENT VIDEO OUT (Y, PB/B-Y, PR/R-Y) connectors on the player

Connect the component via the COMPONENT VIDEO OUT connectors using three video connecting cords (not supplied) of the same kind. You will get a better picture.



Notes
- Refer to the instructions supplied with the component to be connected.
- Do not connect this player to a video deck. If you do, noise may appear in the picture.



- Depending on the TV or receiver (amplifier), sound distortion may occur because the audio output level is high. In this case, set "AUDIO ATT" in "AUDIO SETUP" to "ON" in the setup display. For details, see page 65.

Setups for the player

Some setup adjustments are necessary for the player depending on the TV or other components to be connected.
Use the setup display to change the various settings. For details on using the setup display, see page 56.

- **To connect the player to a normal TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "4:3 LETTER BOX" (default setting) or "4:3 PAN SCAN." For details, see page 60.
- **To connect the player to a TV having the WIDE MODE function**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9/4:3 WIDE MODE." For details, see page 60.
- **To connect the player to a wide-screen TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9/4:3 WIDE MODE." For details, see page 60.

Receiver (Amplifier) Hookups

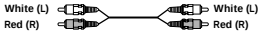
Connect your receiver (amplifier) as follows.
Refer as well to the instructions supplied with the component to be connected.

You can enjoy surround sounds even if you only connect front speakers

You can use 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (VES: Virtual Enhanced Surround and VIRTUAL SEMI MULTI DIMENSION). For details, see page 39.

Required cords

Audio connecting cord (not supplied) (1)



S video cord (supplied) (1)

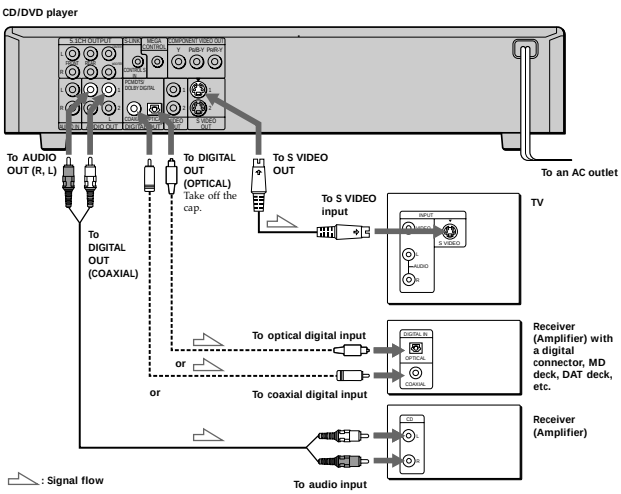
When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

If you have a digital component such as a receiver (amplifier) with a digital connector, DAT or MD, connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).

Optical digital connecting cord (not supplied) (1)

Coaxial digital connecting cord (not supplied) (1)

Do not connect the power cord to a switched AC outlet such as the AC outlet on a receiver (amplifier). Doing so may cause the Playback Memory, Bookmark, Disc Memo and menu settings to be cancelled when you turn off the receiver



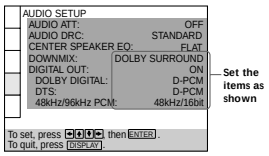
Note
You cannot enjoy a picture with an S video signal if your TV does not conform to the S video signal. When your TV does not have an S VIDEO input, connect the component via the VIDEO INPUT connector using the supplied audio/video connecting cord instead of the S video cord. For details, see page 8.
Refer to the instructions supplied with your TV.

Setups for the player when using the digital connecting cords

Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied). You do not need to use the audio connecting cord.
Some setup adjustments are necessary for the player depending on the components to be connected.
Use the setup display to change the various settings. For details on using the setup display, see page 56.

If your receiver (amplifier) does not have a built-in Dolby* Digital decoder or DTS decoder

- **To listen to the sound through speakers connected to a receiver (amplifier) which has a digital connector, or to output the sound to a digital component such as a DAT or MD deck**
  Set the "AUDIO SETUP" items in the setup display (page 65) as shown in the illustration below. These are the default settings.

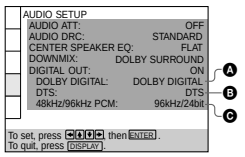


When you have made the connections using an optical or coaxial digital connecting cord, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL," "DTS" to "DTS" and "48kHz/96kHz PCM" to "96kHz/24bit." If you do, a loud noise will suddenly come out from the speakers, affecting your ears or causing the speakers to be damaged.

Note
You cannot make direct digital audio recordings of discs recorded in multichannel surround format using an MD deck or DAT deck.

If you have an audio component with a built-in Dolby Digital decoder or DTS decoder

- **When you connect an audio component with a built-in Dolby Digital decoder A**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "DOLBY DIGITAL" in the setup display (page 66).
- **When you connect an audio component with a built-in DTS decoder B**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DTS" to "DTS" in the setup display (page 67).
- **When you connect an audio component that is compatible with 96kHz/24bit C**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "48kHz/96kHz PCM" to "96kHz/24bit" in the setup display (page 67).



Notes
- **When you do not connect an audio component with a built-in Dolby Digital decoder, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL."**
- **When you do not connect an audio component with a built-in DTS decoder, do not set "DTS" to "DTS."**
- **Do not set to "96kHz/24bit" if your receiver (amplifier) is not compatible with 96 kHz.**
- When you connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector, the Virtual 3D Surround effect cannot be heard.

* Manufactured under license from Dolby Laboratories.
"Dolby," "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

5.1 Channel Surround Hookups

Some DVDs have a sound track with up to 5.1 channels recorded in Dolby Digital or DTS format. Using a receiver (amplifier) having 5.1 channel inputs and 6 speakers, you can enjoy a more realistic audio presence in the comfort of your own home.
"5.1 channel" stands for the 2 front speakers (Left and Right), 2 rear speakers (Left and Right), 1 center speaker, and a subwoofer.
Even if you have fewer than 6 speakers, the player appropriately distributes the output signal to the speakers.
This player also has a VIRTUAL 3D SURROUND mode. You can use 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR, etc.). For details on the VIRTUAL 3D SURROUND mode, see page 39.

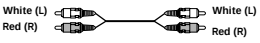
Speaker placement

For the best possible surround sound, we recommend the following conditions.
- Use higher performance speakers.
- Use rear and center speakers that match your front speakers in size and performance.
- Place the subwoofer between the front (L, R) speakers if possible.

Note
Do not place the rear speakers farther away from the listening position than the front speakers.

Required cords

Audio cords (not supplied) (2)
For the 5.1CH OUTPUT FRONT and REAR jacks



Monaural audio cords (not supplied) (2)
For 5.1CH OUTPUT CENTER and WOOFER jacks.

S video cord (supplied) (1)
For the S VIDEO OUT jack

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

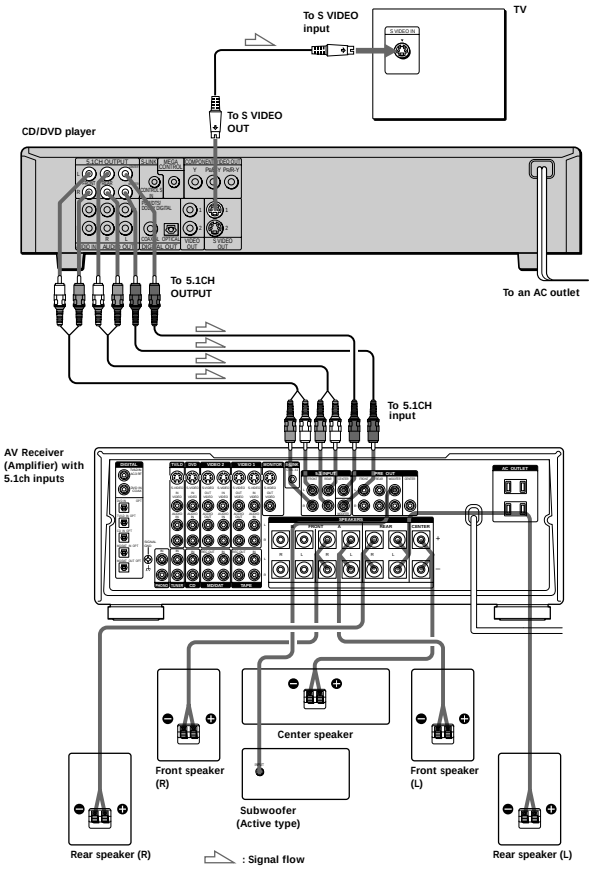
Do not connect the power cord to a switched AC outlet such as the AC outlet on a receiver (amplifier). Doing so may cause the Playback Memory, Bookmark, Disc Memo and menu settings to be cancelled when you turn off the receiver.

Notes
- Do not connect the power cord to an AC outlet or press the POWER switch before completing all connections.
- Refer to the instructions supplied with the component to be connected.
- The cord connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.
- If you want to connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied), see page 10.

Setups for the player

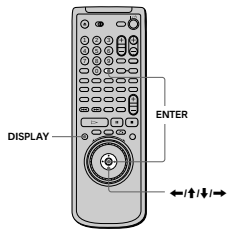
Some setup adjustments are necessary for the player depending on the components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 56.

- **To enjoy surround sounds by connecting the player to a receiver (amplifier) with 5.1 channel inputs**
  Correctly adjust each speaker to your listening position (page 67).

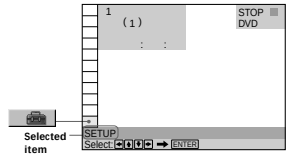


Selecting the Language for the On-Screen Display

You can select the language for the setup display, the Control Menu display or the messages displayed on the screen. The default setting is "ENGLISH."

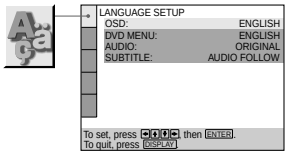


1 When the player is in stop mode, press DISPLAY and select "SETUP" using ↑/↓.
The on-screen menu items are different depending on whether there is a disc in the player or not.



2 Press ENTER.
The setup display appears on the TV screen.

3 Select "LANGUAGE SETUP" using ↑/↓, and then press ENTER.



4 Select "OSD" using ↑/↓, then press ➡ or ENTER.
The languages you can select are displayed.

5 Select the desired language using ↑/↓, then press ENTER.

6 Press DISPLAY.
The setup display disappears.

7 Press DISPLAY repeatedly to turn off the on-screen menu.

To return to the previous screen
Press ↶RETURN.

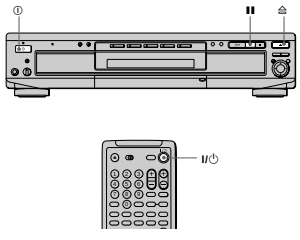
To quit while making a selection
Press DISPLAY.

Note
The languages you can select are the ones displayed in step 4.
For details, see page 59.

Operation Sound Effects (Sound Feedback)

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

Operation	Operation sound
Power is turned on	One beep
Power is turned off	Two beeps
▷ is pressed	One beep
❚❚ is pressed	Two beeps
Playback is stopped	One long beep
Operation is not possible	Three beeps



1 Press ⏻ on the player, then press I/⏻ on the remote.
The power indicator lights up in green.
When there is a disc in the player, press ⏏ and remove the disc. Then press ⏏ again to close the disc tray.

2 Press and hold ❚❚ on the player for more than two seconds.
You will hear one beep and the Sound Feedback function is turned on.

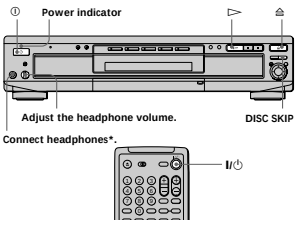
To turn off the Sound Feedback Function
When there is no disc in the player, press and hold ❚❚ on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.

Playing Discs

This chapter describes how to play a DVD/CD/VIDEO CD.

Playing Discs DVD VIDEO CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the instructions supplied with your disc.



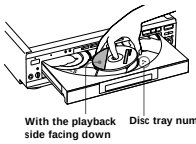
* For details on using the VIRTUAL SURROUND HEADPHONES function, see "Digital Cinema Sound Settings" on page 39.

1 **Turn on your TV.**
Turn on the TV and select the video input so that you can view the pictures from this player.

When using a receiver (amplifier)
Turn on the receiver (amplifier) and select the appropriate position so that you can listen to the sound from this player.

2 **Press ⏻ to turn on the player.**
The player enters standby mode and the power indicator lights up in red.

3 **Press ⏏ on the player, and place a disc on the disc tray.**
To place other discs on the tray, press DISC SKIP on the player and place the discs in the order you want to play them.
Each time you press DISC SKIP, the disc tray turns so you can place the discs in the empty compartments.
The player plays from the last disc placed on the tray.



4 **Press ▷.**
The disc tray closes and the player starts playback of all discs (continuous play). Adjust the volume on the TV or the receiver (amplifier).

After following Step 4

■When playing a DVD
A DVD menu or title menu may appear on the TV screen (see page 21).

■When playing a VIDEO CD
Depending on the VIDEO CD, a menu may appear on the TV screen. You can play the disc interactively by following the instructions on the menu. (PBC Playback, see page 21.)

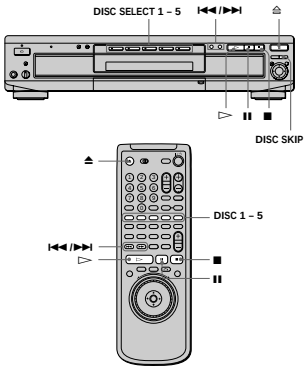
To turn on the player
Press ⏻ on the player. The player enters standby mode and the power indicator lights up in red.
Then press I/⏻ on the remote. The player turns on and the power indicator lights up in green. In standby mode, the player also turns on by pressing ⏏ on the player or by pressing ▷.

To turn off the player
Press I/⏻ on the remote. The player enters standby mode and the power indicator lights up in red.
To disconnect the power of the player, press ⏻ on the player.

Notes on playing DTS sound tracks on a CD
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors even if "DTS" in "AUDIO SETUP" is set to "D-PCM" in the setup display, and may affect your ears or cause your speakers to be damaged.
- Set the sound to "STEREO" when you play DTS sound tracks on a CD. (See "Changing the Sound" on page 35.) If you set the sound to "1/L" or "2/R", no sound will come from the DIGITAL OUT OPTICAL and COAXIAL connectors.
- If you play a CD with a DTS sound track, a loud noise may come out from the AUDIO OUT connectors, affecting your ears or causing the speakers to be damaged.

Notes
- If you leave the player or the remote in pause or stop mode for 15 minutes, the screen saver image appears automatically. It will also appear if you play back a CD for more than 15 minutes. To make the screen saver image go away, press ▷. (If you want to set the screen saver function to off, see page 60.)
- While playing a disc, do not turn off the player by pressing ⏻. Doing so may cancel the settings of the menu. When you turn off the player, press ■ first to stop playback and then press I/⏻ on the remote. After the power indicator lights up in red and the player enters standby mode, press ⏻ on the player.

Additional operations



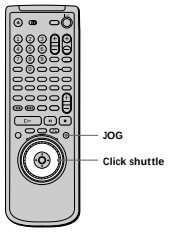
To	Operation
Select a disc	Press DISC SELECT 1 – 5 on the player or DISC 1 – 5 on the remote
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next disc	Press DISC SKIP on the player
Go to the next chapter, track or scene in continuous play mode	Press ▶▶I
Go back to the preceding chapter, track or scene in continuous play mode	Press I◀◀
Stop play and remove the disc	Press ⏏

You can play discs in various modes such as Program Play using the on-screen menu (Control Menu). For Control Menu operations, see page 28.

Playing at Various Speeds/Frame by Frame

DVD VIDEO CD CD

Using the click shuttle and the JOG button/indicator, you can play back a DVD/CD/VIDEO CD at various speeds or frame by frame. Each time you press JOG, it changes between shuttle mode and jog mode.



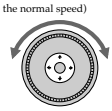
To change the playback speed (Shuttle mode)

Turn the click shuttle. The playback speed changes depending on the turning direction and angle as follows:

When you play back a DVD

During playback

FF2▶▶ Fast forward (about 30 times the normal speed)
↕
FF1▶▶ Fast forward (about 10 times the normal speed)
↕
×2▶ (about twice the normal speed)
↕
PLAY▶ (normal speed)
↕
×2◀ (about twice the normal speed)
↕
FR1◀◀ Fast rewind (about 10 times the normal speed)
↕
FR2◀◀ Fast rewind (about 30 times the normal speed)



If you turn the click shuttle quickly, the playback speed goes to FF2▶▶ or FR2◀◀ at once.

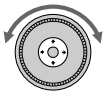
During pause

SLOW1▮▶ Slow (playback direction)
↕
SLOW2▮▶ Slow (playback direction – slower than "SLOW1▮▶")
↕
PAUSE▮▮ Pause
↕
SLOW2 ◀▮ Slow (opposite direction – slower than "SLOW1 ◀▮")
↕
SLOW1 ◀▮ Slow (opposite direction)

When you play back a CD/VIDEO CD

During playback

FF2▶▶ Fast forward (faster than "FF1▶▶")
↕
FF1▶▶ Fast forward
↕
×2▶ (about twice the normal speed)*
↕
PLAY▶ (normal speed)
↕
FR1◀◀ Fast rewind
↕
FR2◀◀ Fast rewind(faster than "FR1◀◀")



* CD Only

If you turn the click shuttle quickly, the playback speed goes to FF2▶▶ or FR2◀◀ at once.

During pause (VIDEO CD only)

SLOW1▮▶ Slow (playback direction)
↕
SLOW2▮▶ Slow (playback direction – slower than "SLOW1▮▶")
↕
PAUSE▮▮ Pause

To return to continuous play
Press ▷.

Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

To play the disc frame by frame (Jog mode) DVD VIDEO CD

1 **Press JOG.**
JOG lights up during jog mode.

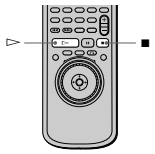
2 **Turn the click shuttle.**
Depending on the turning speed, playback goes to frame-by-frame playback in the direction that the click shuttle is turned. If you turn the click shuttle at a constant speed for a while, the playback speed goes to slow or normal.

To return to Continuous Play
Press ▷.

Note
If you don't operate the click shuttle for about 20 seconds after pressing JOG, it returns to shuttle mode.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

The player remembers the point where you stopped the disc, and when "RESUME" appears on the front panel display, you can resume playback from that point.
As long as you do not open the disc tray, Resume Play will work even if the player enters standby mode by pressing I/⏻ on the remote.



1 **While playing a disc, press ■ to stop playback.**
"RESUME" appears on the front panel display and "Disc will restart from current point. To start from beginning, press STOP again." appears on the TV screen.
If "RESUME" does not appear, Resume Play is not available.

2 **Press ▷.**
The player starts playback from the point where you stopped the disc in Step 1.

To play from the beginning of the disc
When the playing time appears on the front panel display before you start playing, press ■ to reset the playing time, then press ▷.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play)

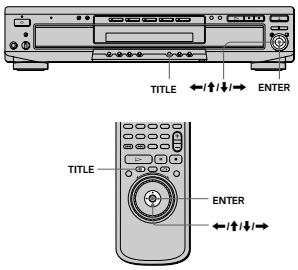
Notes
- Resume Play may not be available on some DVDs.
- Resume Play is not available in Shuffle or Program Play mode.
- Depending on where you stopped the disc, the player may resume playback from a different point.
- The point where you stopped playing is cleared when:
  - you open or close the disc tray
  - you turn the power off by pressing ⏻ on the player
  - you change the play mode
  - you start playback after selecting a title, chapter or track
  - you change the settings in the setup display
  - you press DISC EXPLORER
  - you load disc information by pressing LOAD
  - you press MEGA CONTROL (CTL)

Using the DVD's Menu DVD

Some DVDs have a title menu or a DVD menu that is provided with DVDs only.

Using the title menu

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.



1 **Press TITLE.**
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

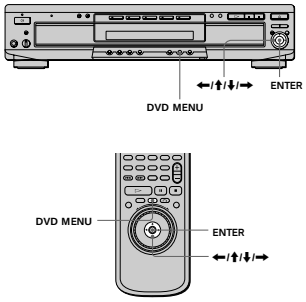
2 **Press ←/↑/↓/→ to select the title you want to play.**
Depending on the disc, you can use the number buttons to select the title.

3 **Press ENTER.**
The player starts playing the selected title.

Notes
- On some DVDs, you may not be able to select the title.
- On some DVDs, a "title menu" may simply be called a "menu" or "title " in the instructions supplied with the disc. "Press ENTER." may also be expressed as "Press SELECT."

Using the DVD menu

Some DVDs allow you to select the disc contents using a menu. When you play these DVDs, you can select the language for the subtitles, the language for the sound, etc., using the DVD menu.



1 **Press DVD MENU.**
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 **Press ←/↑/↓/→ to select the item you want to change.**
Depending on the disc, you can use the number buttons to select the item.

3 **To change other items, repeat Step 2.**

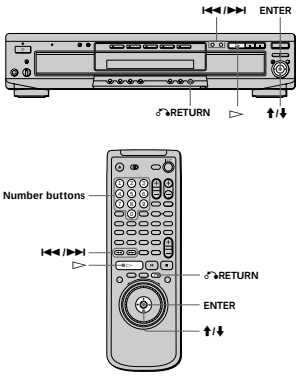
4 **Press ENTER.**

If you want to select the language for the DVD menu
Change the setting using "DVD MENU" in "LANGUAGE SETUP" in the setup display. For details, see page 59.

Note
Depending on the DVD, a "DVD menu" may simply be called a "menu" in the instructions supplied with the disc.

Playing VIDEO CDs with PBC Functions (PBC Playback) VIDEO CD

When playing VIDEO CDs with PBC (Play Back Control) functions (Ver. 2.0 discs), you can enjoy simple interactive operations, search functions, and other such operations. PBC Playback allows you to play VIDEO CDs interactively by following the menu on the TV screen. On this player, you can use the number buttons, ENTER, I◄◄, ►►I, ↑/↓ and ↶RETURN during PBC Playback.



1 **Start playing a VIDEO CD with PBC functions by following Steps 1 to 4 in "Playing Discs" on page 16.**

2 **Select the item number you want.**
Press ↑/↓ to select the item number.
You can also select the item number with the number buttons on the remote.

3 **Press ENTER.**

4 **Follow the instructions in the menu for interactive operations.**
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

Playing VIDEO CDs with PBC Functions (PBC Playback)

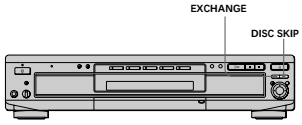
To go back to the menu
Press ↶RETURN, I◄◄, or ►►I.

To cancel PBC playback of a VIDEO CD with PBC functions and play the disc in continuous play mode
There are two ways.
- Before you start playing, select the track you want using I◄◄ or ►►I, then press ENTER or ▻.
- Before you start playing, select the track number using the number buttons on the remote, then press ENTER or ▻.
  "Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
  To return to PBC playback, press ■ twice then press ▻.

Note
Depending on the VIDEO CD, "Press ENTER" in Step 3 may be expressed as "Press SELECT" in the instructions supplied with the disc. In this case, press ▻.

Replacing Discs while Playing a Disc (EXCHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.



1 **Press EXCHANGE.**
The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

2 **Replace the discs in the compartments with new ones.**

3 **Press DISC SKIP.**
The disc tray turns and another two disc compartments appear.

4 **Replace the discs in the compartments with new ones.**

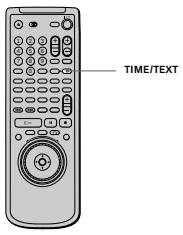
5 **Press EXCHANGE.**
The disc tray closes.

While the disc tray is open after being opened with the EXCHANGE button
- If the playback of the current disc ends, the player stops playing. If the disc is played in 1 DISC Repeat Play mode (page 49), the current disc starts playing again.
- In ALL DISCS Shuffle Play mode (page 48), titles/tracks/chapters are reshuffled on the current disc.
- In Program Play mode (page 45), only the titles/tracks/chapters on the current disc are played.

Note
Do not push the disc tray to close in Step 5, as you may damage the player.

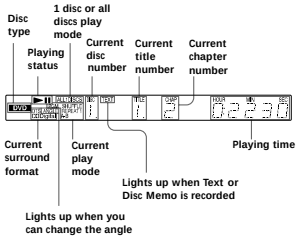
Using the Front Panel Display DVD VIDEO CD CD

You can check information about the disc, such as the total number of titles or tracks or remaining time, using the front panel display.

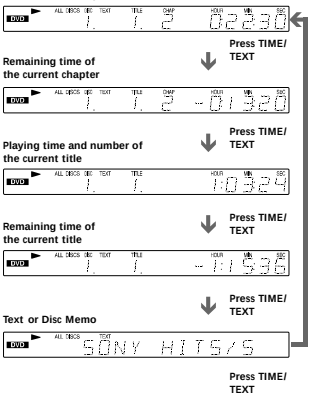


When playing back a DVD DVD

Displaying information while playing the disc



Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.



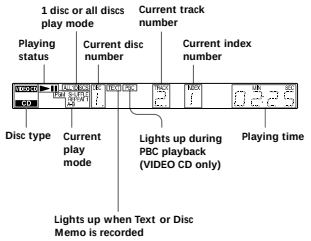
Notes
- On some DVDs, the chapter number or time may not appear or you may not be able to change the front panel display.
- While you are doing Shuffle Play or Program Play, the playing time of the title and the remaining time of the title are not displayed.

Using the Front Panel Display

When playing back a CD/VIDEO CD

VIDEO CD CD

Displaying information while playing a disc



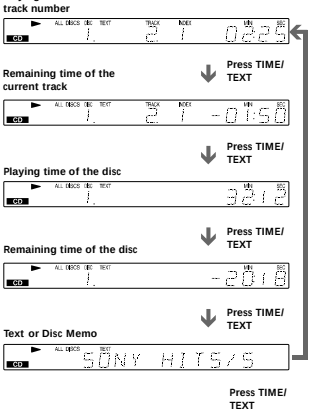
When playing VIDEO CDs with PBC functions

The current scene number is displayed instead of the current track number and the current index number. In this case, the front panel display does not change when you press TIME/TEXT. If TEXT is recorded on the disc, the front panel display changes to the Text display when you press TIME/TEXT (see page 34).

Checking the remaining time

Press TIME/TEXT.

Each time you press TIME/TEXT while playing a disc, the display changes as shown in the following chart.



Note

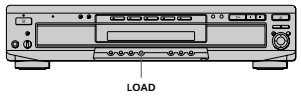
While you are doing Shuffle Play, or Program Play, the playing time of the disc and the remaining time of the disc are not displayed.

Displaying the Disc Information (Disc Explorer)

DVD VIDEO CD CD

You can check the contents of each disc loaded.

Loading the disc information



Press LOAD on the player when the player is in stop or standby mode.

The player reads the disc information of all the discs and loads it into memory so that the disc type, titles and other text information can be displayed.

To cancel loading

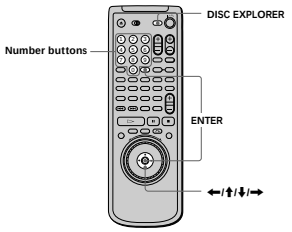
Press ■.

The player can load the disc information even when the power is in standby mode

Press LOAD before turning on the player. The player reads and loads all the disc information.

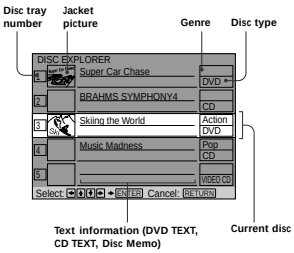
Displaying the information of the loaded discs

You can look at the loaded disc information on the Disc Explorer, and also select the disc to be played on the Disc Explorer.



Press DISC EXPLORER.

The Disc Explorer appears. If a disc is playing, it will stop.



Jacket picture

The jacket picture recorded on the disc appears automatically. If the jacket picture is not recorded, the genre picture recorded in the memory of the player is displayed when you select the genre.

Text information (DVD TEXT, CD TEXT or Disc Memo)

The text information (DVD TEXT or CD TEXT) recorded on the disc appears automatically. If no text information is recorded, you can store the text information (Disc Memo) yourself (page 34).

Displaying the Disc Information (Disc Explorer)

Genre

You can select the genre of the disc yourself.

Disc type

The disc type appears automatically. "?" appears when the player has not loaded the disc information in the memory.

To select the disc on the Disc Explorer

1 **Select the disc by pressing ↑/↓.**

2 **Press ENTER.**

The Disc Explorer disappears and playback starts.

To cancel using the Disc Explorer

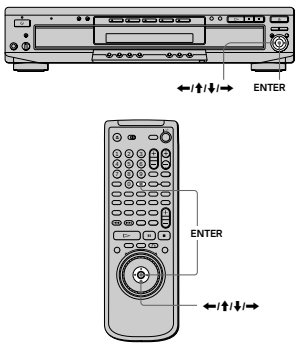
Press ↶RETURN.

Notes

- If you open the tray, the disc information disappears. Press LOAD again to load the disc information.
- If you load or try to play an empty tray, it appears as a white blank in the Disc Explorer. You cannot select this.
- Even if the disc has a jacket picture recorded on it, the jacket picture may not appear on the Disc Explorer.

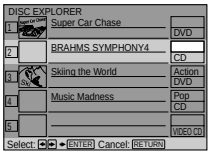
Selecting a genre

You can assign a genre to your disc.



1 **Select the disc on the Disc Explorer using ↑/↓, then press →.**

The genre row only is highlighted.

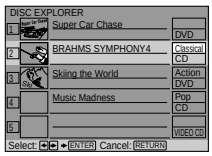


2 **Press ENTER.**

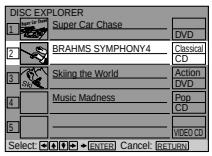
The GENRE SELECTION display appears.

3 **Select the genre by using ←/↑/↓/→, then press ENTER.**

The genre for the selected disc is stored in memory. If no jacket picture is recorded in the disc, the genre picture in the memory of the player is displayed.



4 **Press ← to return to the original Disc Explorer display.**

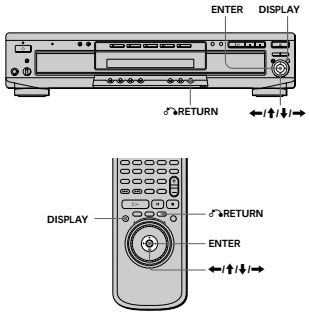


Using Various Functions with the Control Menu

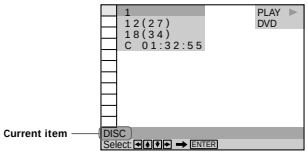
This chapter describes how to play discs in various modes and how to use the convenient features of the on-screen menu (Control Menu).

Using the Control Menu Display DVD VIDEO CD CD

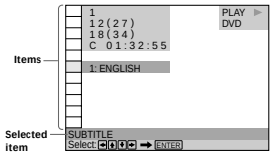
Using the Control Menu display, you can select the starting point, play scenes in any order you like, change the viewing angles, make Digital Cinema Sound settings, and other such operations.
The possible operations are different depending on the kind of disc.
For details on each Control Menu display item, see pages 31 to 55.



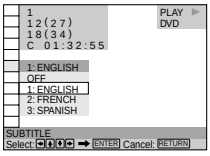
1 Press DISPLAY to show the Control Menu display on the TV screen.



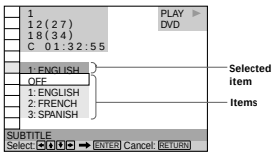
2 Select the item you want using ↑/↓.



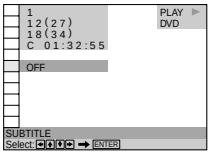
3 Press ENTER.



4 Select the item you want using ↑/↓.



5 Press ENTER.



To cancel while making a selection
Press ↶ RETURN.

To display other items
Each time you press DISPLAY, the Control Menu display changes as follows:

Control Menu display 1
↓
Control Menu display 2
(The items except the first three items from the top are changed to other items.)
↓
ADVANCED display (see page 42)
↓
Control Menu display off

The Control Menu display items are different depending on the disc.

You can select some items directly
Some items can be selected by pressing the corresponding button on the remote or on the player. In this case, only the item you selected is displayed. For instructions on using the buttons, see the pages of each relevant item. For a list of available buttons on the player and remote, see pages 82 and 84.

Note
Some Control Menu display items require operations other than selecting the setting. For details on these items, see the relevant pages.

Control Menu Item List

DISC (page 31)
TITLE (DVD only) (page 31)/ SCENE (VIDEO CD during PBC playback only) (page 31)/ TRACK (VIDEO CD only) (page 31)
CHAPTER (DVD only) (page 31)/ INDEX (VIDEO CD only) (page 31)
TRACK (CD only) (page 31)
INDEX (CD only) (page 31)

You can select a disc or search for a point on the disc by selecting the title, chapter, track, index or scene.

TIME/MEMO (pages 32, 33, 34)
TIME/TEXT (pages 32, 33, 34)

You can check the playing time and remaining time of the current title, chapter, track and the total playing time or remaining time of the disc.
You can also search for a scene by inputting the time code.
You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display. When the disc is a VIDEO CD or the DVD TEXT/CD TEXT is not recorded on the disc, you can label the disc using the Disc Memo function.

AUDIO (page 35)

If the DVD is recorded with multilingual tracks, you can select the language you want while playing the DVD.
If the DVD is recorded in multiple audio formats (PCM, Dolby Digital or DTS), you can select the audio format you want while playing the DVD.
With CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers.

SUBTITLE (DVD only) (page 37)

With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want.

ANGLE (DVD only) (page 38)

With DVDs on which various angles (multi-angles) are recorded, you can change the angle of the scene.

VIRTUAL 3D SURROUND (page 39)

Select one of the surround modes to enjoy multichannel Dolby Digital DVDs with only 2 or 4 speakers.
When you connect only 2 front speakers, Virtual Enhanced Surround (VES) and VIRTUAL SEMI MULTI DIMENSION let you enjoy 3D sound by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers.
When you connect 2 front speakers and 2 rear speakers, you can use this function's 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR, etc.).

ADVANCED (DVD only) (page 42)

You can check play information about the bit rate or the position where the disc is being played (layer).

CUSTOM PARENTAL CONTROL (page 43)

Using a registered password, you can set playback restrictions for a desired disc.
The same password is used for both Parental Control (page 62) and Custom Parental Control.

SETUP (page 56)

Using the setup display, you can do the initial setup, adjust the picture and sound and set the various outputs. You can also set a language for the subtitles and the setup display, limit playback by children, and so on. For details about the setup display, see page 56.

1/ALL DISCS (page 45)

You can have the player play one or all of the discs. You can switch between one disc mode or all disc mode in the Program Play, Shuffle Play and Repeat Play modes.

PROGRAM (page 45)

You can play the contents of the disc(s) in the order you want by arranging the order of the titles, chapters or tracks on the disc(s) to create your own program.

SHUFFLE (page 48)

You can have the player "shuffle" titles, chapters or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order.

REPEAT (page 49)

You can play all of the titles/tracks on a disc or all of the discs, or a single title/chapter/track repeatedly.

A-B REPEAT (page 50)

You can play a specific portion of a title, chapter, or track repeatedly.

VIDEO EQUALIZER (DVD, VIDEO CD only) (page 51)

You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want.

DIGITAL VIDEO ENHANCER (DVD, VIDEO CD only) (page 52)

You can make the picture clearer by emphasizing the outlines of images on your TV screen.

VIEWER (DVD, VIDEO CD only) (page 53)

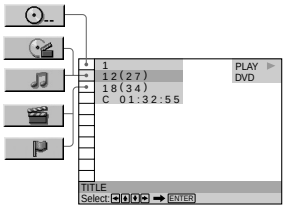
You can divide the screen into 9 sections (quick reference screen) and quickly search for a scene or a bookmark.

Searching for a Disc/Title/ Chapter/Track/Index/Scene

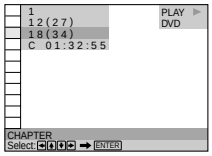
DVD VIDEO CD CD

You can select a disc, or search the disc by title, chapter, track, index or scene.

Select "DISC," "TITLE," "CHAPTER," "TRACK," "INDEX" or "SCENE" after pressing DISPLAY.
When you play back a DVD, "TITLE" and "CHAPTER" are displayed.
When you play back a VIDEO CD/CD, "TRACK" and "INDEX" are displayed. When you play back a VIDEO CD with PBC functions, "SCENE" is displayed.

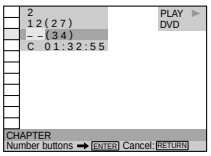


1 Select "DISC," "TITLE," "CHAPTER," "TRACK," "INDEX" or "SCENE" using ↑/↓.
"✻✻(✻✻)" is highlighted (✻✻ refers to a number). The number in parentheses indicates the total number of titles, chapters, tracks, indexes or scenes.



Searching for a Disc/Title/Chapter/Track/Index/Scene

2 Press ➡ or ENTER.
"✻✻(✻✻)" changes to "— — (✻✻)".



3 Select the number of the disc, title, chapter, track, index or scene you want to search for using the number buttons, then press ENTER.
The player starts playback at the selected number.
To cancel the number, press CLEAR before pressing ENTER.

To cancel while making a selection
Press ↶RETURN.

You can select a disc directly
Press DISC SELECT 1 – 5 on the player or DISC 1 – 5 on the remote.

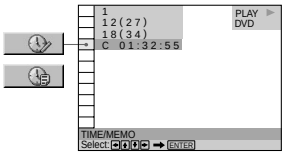
Notes
- The title, chapter or track number displayed is the same number recorded on the disc.
- The index numbers are not displayed during PBC playback of VIDEO CDs.

Checking the Playing Time and Remaining Time

DVD VIDEO CD CD

You can check the playing time and remaining time of the current title, chapter or track and the total playing time or remaining time of the disc.

Press DISPLAY. Then press TIME/TEXT on the remote to change the time information.
You can also check the DVD TEXT, CD TEXT or Disc Memo, and label the disc. See page 34.



When playing a DVD
■ TIME/MEMO or TIME/TEXT
- C ✻✻:✻✻:✻✻: Playing time of the current chapter
- C –✻✻:✻✻:✻✻: Remaining time of the current chapter
- T ✻✻:✻✻:✻✻: Playing time of the current title
- T –✻✻:✻✻:✻✻: Remaining time of the current title

When playing a VIDEO CD (during PBC playback)
■ TIME/MEMO
- ✻✻:✻✻: Playing time of the current scene

When playing a VIDEO CD (in continuous play) or CD
■ TIME/MEMO or TIME/TEXT
- T ✻✻:✻✻: Playing time of the current track
- T –✻✻:✻✻: Remaining time of the current track
- D ✻✻:✻✻: Playing time of the current disc
- D –✻✻:✻✻: Remaining time of the current disc

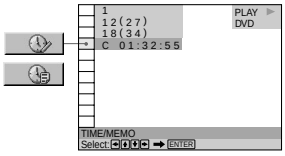
You can select "TIME/MEMO" or "TIME/TEXT" directly
Press TIME/TEXT on the remote. Each time you press the button, the time information changes.

Selecting a Starting Point Using the Time Code

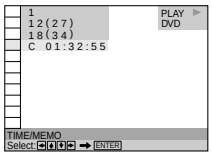
DVD

You can search for a starting point by inputting the time code.

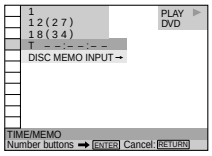
Select "TIME/MEMO" or "TIME/TEXT" after pressing DISPLAY.
The time code corresponds to the approximate actual playing time. For example, to search for a scene 2 hours 10 minutes 20 seconds past the beginning, input 2:10:20.



1 Select "C ✻✻:✻✻:✻✻" (playing time of the current chapter) when playing a DVD.



2 Press ➡ or ENTER.
Time code changes to "T – – : – – : – –".



3 Input the time code using the number buttons, then press ENTER.
The player starts playback at the selected time code.
To cancel the number, press CLEAR before pressing ENTER.

To cancel while making a selection
Press ↶RETURN.

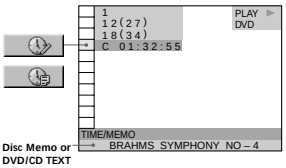
Note
When you input the time code, input the playing time of the title, not the chapter or track time.

Labeling the Disc

DVD VIDEO CD CD

You can label discs so that the label appears on your TV screen and the front panel display when you play the disc. If the disc already has DVD TEXT or CD TEXT recorded on it, then this information will appear instead.

Press DISPLAY. "TIME/MEMO" appears. Press TIME/TEXT on the remote until the Disc Memo appears at the bottom of the display. If the disc does not contain a label, "NO TEXT" is displayed. Follow the steps below to label a disc.
If the disc has DVD TEXT or CD TEXT already recorded on it, "TIME/TEXT" appears instead. Press TIME/TEXT on the remote until the information is displayed at the bottom of the display. You cannot change this information.



Disc Memo or DVD/CD TEXT

You can select "TIME/MEMO" or "TIME/TEXT" directly
Press TIME/TEXT on the remote. To display DVD/CD TEXT or Disc Memo, press TIME/TEXT until DVD/CD TEXT or Disc Memo is displayed.

You can view the entire DVD/CD TEXT or Disc Memo recorded on the disc
DVD/CD TEXT or Disc Memo is scrolled on the front panel display.

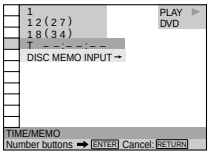
Note
This player can only display the first level of DVD/CD TEXT information.

Labeling discs (Disc Memo)

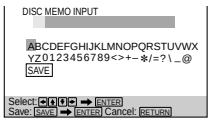
When DVD TEXT or CD TEXT is not recorded on the disc, you can put a personal title on the disc by labeling it on the on-screen display. You can input up to 20 characters per disc.
You can also have the player display the Disc Memo each time you select the disc. The Disc Memo can be anything you like, such as a title, musician's name, category or date of purchase.

1 Select the disc you want to label.

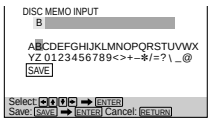
2 Select "TIME/MEMO" and press ENTER.
"DISC MEMO INPUT➡" appears.



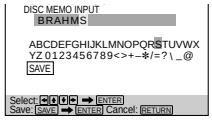
3 Select "DISC MEMO INPUT➡" and press ENTER.
The DISC MEMO INPUT display appears.



4 Select a character by pressing ⬅/⬆/⬇/➡ or by turning the click shuttle on the remote.
The selected character changes color.

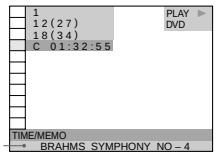


5 Press ENTER.



6 Repeat Steps 4 and 5 to input other characters.

7 When you have entered all the characters for the Disc Memo, select SAVE by pressing ⬅/⬆/⬇/➡ and then press ENTER.
The Disc Memo is stored.



Disc Memo or DVD/CD TEXT

To correct the characters
- To erase the characters:
  1 Move the cursor to the character you want to erase by pressing ⏮ or ⏭.
  2 Press CLEAR.
- To insert or overwrite the characters:
  1 Move the cursor to the character you want to correct by pressing ⏮ or ⏭.
  2 Select the correct character by pressing ⬅/⬆/⬇/➡ or by turning the click shuttle on the remote.
  3 To insert the character, press ENTER.
  To overwrite, don't press ENTER but move the cursor by pressing ⏮ or ⏭.

You can save the Disc Memo using the remote
After you have entered the characters, press INPUT on the remote to store the Disc Memo.

You can display the Disc Memo input display using the remote
Press INPUT on the remote.

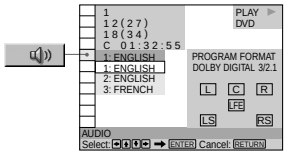
Notes
- Do not turn off the player by pressing ⏻. Doing so may cancel the settings. When you turn off the player, press ■ first to stop playback and then press I/⏻ on the remote. After the power indicator lights up in red and the player enters standby mode, press ⏻ on the player.
- You can label up to 300 discs. When you have the player store over 300 discs in memory, each new Disc Memo erases the oldest Disc Memo from those first stored.

Changing the Sound

DVD VIDEO CD CD

If the DVD is recorded with multilingual tracks, you can select the language you want while playing the DVD.
If the DVD is recorded in multiple audio formats (PCM, Dolby Digital or DTS), you can select the audio format you want while playing the DVD.
With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. In this case, the sound loses its stereo effect. For example, with a disc containing a song, the right channel may output the vocals and the left channel may output the instrumental. If you only want to hear the instrumental, you can select the left channel and hear it from both speakers.

Select "AUDIO" after pressing DISPLAY.



■ AUDIO
When playing a DVD
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they represent the language code. Select the language code from the list on page 81.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats. The current audio format is shown on the "PROGRAM FORMAT" display.

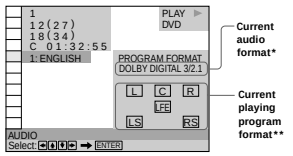
When playing a VIDEO CD or a CD
The default setting is underlined.
- STEREO : The standard stereo sound
- 1/L : The sound of the left channel (monaural)
- 2/R : The sound of the right channel (monaural)

You can select "AUDIO" directly
Press AUDIO on the remote. Each time you press the button, the item changes.

Notes
- Depending on the DVD, you may not be able to change the languages even if multilingual tracks are recorded on the DVD.
- While playing the CD/VIDEO CD, standard stereo playback will be resumed when:
  – you open or close the disc tray
  – the player enters standby mode by pressing I/⏻ on the remote
  – you turn the power off by pressing ⏻ on the player
- While playing the DVD, the sound may be changed when:
  – you open or close the disc tray
  – you change the title

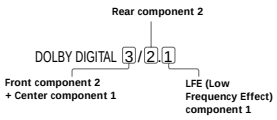
Displaying the audio information of the disc DVD

When you select "AUDIO," the channels being played are displayed on the screen.
For example, in Dolby Digital format, multiple signals ranging from monaural to 5.1 channel signals can be recorded on a DVD. Depending on the DVD, the number of the recorded channels may be different.



* "PCM," "DTS" or "DOLBY DIGITAL" is displayed. In case of "DOLBY DIGITAL," the channels in the playing track are displayed by numbers as follows:

For Dolby Digital 5.1 ch:

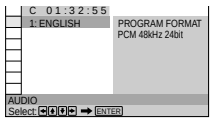


** The letters in the program format display mean the following:

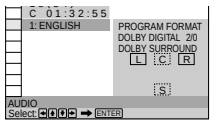
L: Front (left)
R: Front (right)
C: Center (monaural)
LS: Rear (left)
RS: Rear (right)
S: Rear (monaural) – the rear component of the Dolby Surround processed stereo signal and the Dolby Digital signal.
LFE: LFE (Low Frequency Effect)

The display examples are as follows:

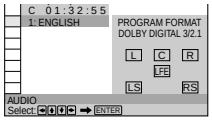
•PCM (stereo)



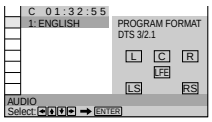
•Dolby Surround



•Dolby Digital 5.1ch
When an LFE signal component is output, "LFE" is enclosed in a solid line. When an LFE signal component is not output, "LFE" is enclosed in a broken line.



•DTS
When an LFE signal component is output, "LFE" is enclosed in a solid line. When an LFE signal component is not output, "LFE" is enclosed in a broken line.

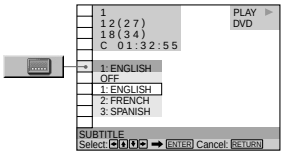


Note
When the signal contains rear signal components such as LS, RS or S, the Virtual 3D Surround effect is enhanced (page 39).

Displaying the Subtitles DVD

With DVDs on which subtitles are recorded, you can turn the subtitles on and off whenever you want while playing the DVD.
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want. For example, you can select the language you want to practice and turn the subtitles on for better understanding.

Select "SUBTITLE" after pressing DISPLAY.



■ SUBTITLE
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they indicate the language code. Select the language code from the list on page 81.

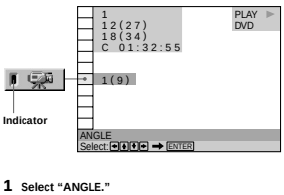
You can select "SUBTITLE" directly
Press SUBTITLE on the remote. Each time you press the button, the item changes.

Notes
- When playing a DVD on which no subtitles are recorded, no subtitles appear.
- Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on the DVD.
- Depending on the DVD, you may not be able to turn the subtitles off.
- The type and number of languages for subtitles vary from disc to disc.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.
- While playing the DVD, the subtitle may change when:
  – you open or close the disc tray
  – you change the title

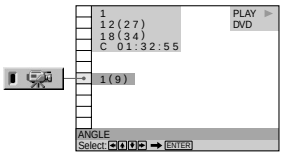
Changing the Angles DVD

With DVDs on which various angles (multi-angles) for a scene are recorded, you can change the angles. For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train or from the right window without having the train's movement interrupted.

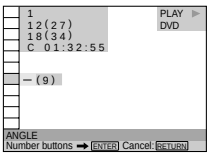
Select "ANGLE" after pressing DISPLAY. When the angles can be changed, the "ANGLE" indicator lights up in green.



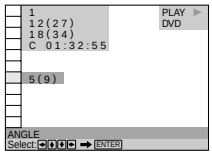
1 Select "ANGLE."



2 Press ➡.
The number of the angle changes to "–". The number in parentheses indicates the total number of angles.



3 Select the angle number using the number buttons or ↑/↓, then press ENTER.
The angle is changed to the selected angle.



You can select the angle directly
Press ANGLE on the remote. Each time you press the button, the angle changes.

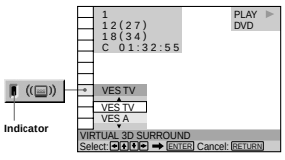
You can display different angles simultaneously (ANGLE VIEWER)
You can display all the angles recorded on the disc on the same screen, and start playback in continuous mode from the chosen angle directly. The angles are displayed on a screen divided in 9 sections. For details, see page 53.

Notes
- The number of angles varies from disc to disc or from scene to scene. The number of angles that can be changed on a scene is equal to the number of angles recorded for that scene.
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Digital Cinema Sound Settings DVD VIDEO CD CD

You can enjoy 3D surround sounds while playing discs including Dolby Digital and DTS DVDs, even if you only have 2 or 4 speakers. Select the surround mode that best suits your speaker setup.
You can also experience virtual 3D surround sound effects through your headphones.

Select "VIRTUAL 3D SURROUND" after pressing DISPLAY. When you select any item except "OFF," the "VIRTUAL 3D SURROUND" indicator lights up in green.



■ VIRTUAL 3D SURROUND
The default setting is underlined.
• OFF
For 2 speaker setups
• VES TV
• VES A
• VES B
• VIRTUAL SEMI MULTI DIMENSION
For 4 (or more) speaker setups
• NORMAL SURROUND
• ENHANCED SURROUND
• VIRTUAL REAR SHIFT
• VIRTUAL MULTI REAR
• VIRTUAL MULTI DIMENSION
When using headphones
• VIRTUAL SURROUND HEADPHONES
Select the desired item. For details on each item, see the following explanation.

Notes
- If you connect only 2 front speakers, you can only use "VES TV," "VES A," "VES B" or "VIRTUAL SEMI MULTI DIMENSION." If you connect more speakers, we recommend that you select an item other than those above.
- To enjoy the original Dolby Digital sound through the 5.1CH OUTPUT connectors, correctly set each speaker position and distance. For details on setting each speaker, see page 67.

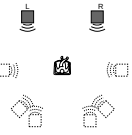
For 2 speaker setups

When you connect only 2 front speakers, Virtual Enhanced Surround lets you enjoy surround sound effects by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. Select one of the following modes:
VES TV, VES A, VES B, VIRTUAL SEMI MULTI DIMENSION.
If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) connector, the surround effect will be heard only when you set "DOLBY DIGITAL" to "D-PCM" and "DTS" to "D-PCM" in "AUDIO SETUP."

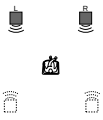
OFF
Outputs all channel signals recorded on the disc. For example, outputs 2-channel signals for the stereo sound of a CD or the Dolby Digital and DTS sounds of the DVD. When you connect fewer than 6 speakers, the player appropriately distributes the output signal for the missing speaker to other speakers.

VES (Virtual Enhanced Surround) TV
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. This mode is effective when the distance between the front L and R speakers is short, such as built-in speakers on a stereo TV.

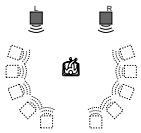
VES (Virtual Enhanced Surround) A
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



VES (Virtual Enhanced Surround) B
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



VIRTUAL SEMI MULTI DIMENSION
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. This mode creates 5 sets of virtual speakers surrounding the listener at a 30° angle of elevation.



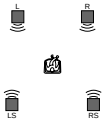
L: Front speaker (left)
R: Front speaker (right)
⬚: Virtual speaker

For 4 (or more) speaker setups

When you connect 2 front speakers and 2 rear speakers, you can enjoy Dolby Surround (Pro Logic) sounds, or use 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position or create entire sets of virtual rear speakers from 1 set of actual rear speakers. Select one of the following modes:
NORMAL SURROUND, ENHANCED SURROUND, VIRTUAL REAR SHIFT, VIRTUAL MULTI REAR, VIRTUAL MULTI DIMENSION.

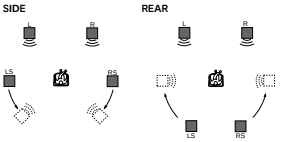
OFF
Outputs all channel signals recorded on the disc. For example, outputs 2-channel signals for the stereo sound of a CD or the Dolby Digital and DTS sounds of the DVD. When you connect fewer than 6 speakers, the player appropriately distributes the output signal for the missing speaker to other speakers.

NORMAL SURROUND
Software with 2 channel audio signals is decoded with Dolby Surround (Pro Logic) to create surround effects. The rear speakers will emit identical monaural sounds. If you are using a center speaker, Dolby Surround (Pro Logic) will also create the appropriate sounds for the center speaker.

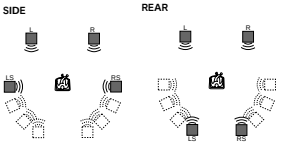


ENHANCED SURROUND
Provides a greater sense of presence from a Dolby Surround (Pro Logic) source with a monaural rear channel signal. Produces a stereo like effect in the rear channels.

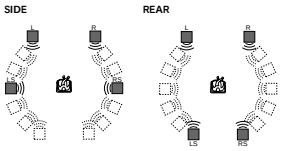
VIRTUAL REAR SHIFT
Uses 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position. The virtual speakers are reproduced as shown in the illustration below. The shift postion differs according to the setting of the rear speaker position (page 68).



VIRTUAL MULTI REAR
Uses 3D sound imaging to create an array of virtual rear speakers from a single pair of actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The position of the virtual rear speakers differs according to the setting of the rear speaker position (page 68).



VIRTUAL MULTI DIMENSION
Uses 3D sound imaging to create an array of virtual rear speaker positions higher than the listener from a single pair of actual rear speakers. This mode creates 5 sets of virtual speakers surrounding the listener at approximately a 30° angle of elevation. The effect differs according to the setting of the rear speaker position (page 68).



L: Front speaker (left)
R: Front speaker (right)
LS: Rear speaker (left)
RS: Rear speaker (right)
⬚: Virtual speaker

You can select "VIRTUAL 3D SURROUND" directly
Press VIRTUAL 3D SURROUND on the player. Each time you press the button, the mode changes.

Notes
- When you select an item, the sound cuts off for a moment.
- When the playing signal does not contain a signal for the rear speakers, the 3D surround effects may be difficult to hear.
- When you connect a center speaker and a subwoofer, you can also hear the sound from the center speaker and the subwoofer. However, when you select "VES TV," "VES A," "VES B" or "VIRTUAL SEMI MULTI DIMENSION," the player does not output the sound from the center speaker.
- When you select one of the VIRTUAL 3D SURROUND modes, set the surround setting of the connected units, such as the amplifier, to OFF.
- The sampling frequency is converted to 48 kHz when a VIRTUAL 3D SURROUND mode is selected.
- If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) connectors, the surround effect will not be heard when you play a CD.
- Set the front speakers to form an equilateral triangle with the listening position at the top. Otherwise, the effects may be difficult to hear even if you select "VES A," "VES B" or "VIRTUAL SEMI MULTI DIMENSION."
- When you connect 4 speakers, the surround effect will not be heard if you use the DIGITAL OUT (OPTICAL or COAXIAL) connectors.

When using headphones

Select VIRTUAL SURROUND HEADPHONES when you want to experience Virtual 3D Surround effects through your headphones.

VIRTUAL SURROUND HEADPHONES
Uses 3D sound imaging to place the listener in an acoustically sophisticated movie studio by giving greater definition to the sound. Adjust the volume using the PHONES LEVEL control to the right of the PHONES connector. You can also enjoy the surround effect through your receiver's headphones connector when your receiver is connected to this player.

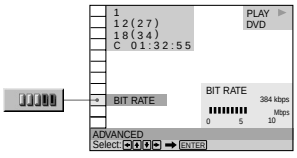
You canselect "VIRTUAL SURROUND HEADPHONES" directly
Press VIRTUAL SURROUND HEADPHONES on the player.
To turn it off, press the button again.

Notes
- When you press VIRTUAL SURROUND HEADPHONES on the player, the VIRTUAL 3D SURROUND mode turns off and vice versa.
- If the player is set up to output the signal from DIGITAL OUT (OPTICAL or COAXIAL) and you are using your receiver's headphones, the surround effect will be heard only when you set "DOLBY DIGITAL" to "D-PCM" and "DTS" to "D-PCM" in "AUDIO SETUP."

Checking the Play Information DVD

You can check information such as the bit rate or the disc layer that is being played.
While playing a disc, the approximate bit rate of the playback picture is always displayed as Mbps (Mega bit per second) and the audio as kbps (kilo bit per second).

Select "ADVANCED" after pressing DISPLAY.



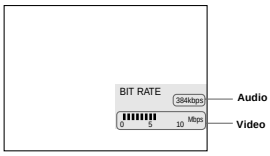
■ **ADVANCED**
The default setting is underlined.

When playing a DVD
- BIT RATE: displays the bit rate.
- LAYER: displays the layer and the pick-up point.
- OFF: turns off ADVANCED display.

Displays of each item

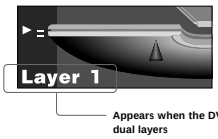
By pressing DISPLAY repeatedly, you can display either "BIT RATE" or "LAYER," whichever was selected in "ADVANCED."

BIT RATE



Bit rate refers to the amount of video/audio data per second in a disc. The higher the bit rate, the larger the amount of data. When the bit rate level is high, there is a large amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

LAYER

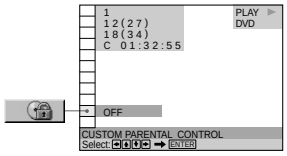


Indicates the approximate point where the disc is playing. If it is a dual-layer DVD, the player indicates which layer is being read ("Layer 0" or "Layer 1").
For details on the layers, see page 79 (DVD).

Locking Discs (Custom Parental Control) DVD VIDEO CD CD

Using a registered password, you can set playback restrictions for the desired disc(s).
You can set the same Custom Parental Control password for up to 300 discs. When you set the three-hundred and first disc, the first disc is canceled.
The same password is used for both Parental Control (page 62) and Custom Parental Control.

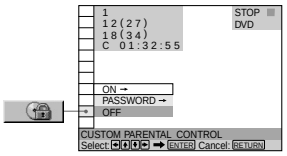
Select "CUSTOM PARENTAL CONTROL" after pressing DISPLAY.



Setting the Custom Parental Control for a disc

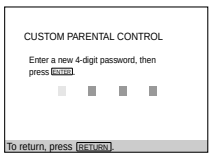
1 Insert and select the disc you want to lock.
If a disc is playing, press ■ to stop playback.

2 Select "CUSTOM PARENTAL CONTROL" using ↑/↓, then press ENTER.

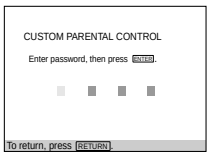


3 Select "ON→" using ↑/↓, then press ENTER.

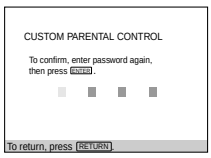
■ **If you have not entered a password**
The display for entering a password appears.



■ **When you have already registered a password**
The display for confirming the password appears. Skip Step 4.



4 Enter a 4-digit password using the number buttons, then press ENTER.
The digits change to asterisks (✳), and the display for confirming the password appears.



5 Enter the same 4-digit password using the number buttons, then press ENTER.
"Custom parental control is set." appears and then the screen returns to the Control Menu display.

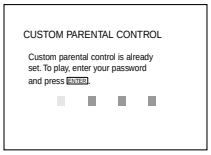
To return to the normal screen
Press ↶RETURN.

To turn off the Custom Parental Control function
1 Select the disc for which you want to turn off the Custom Parental Control function.
2 Select "CUSTOM PARENTAL CONTROL" using ↑/↓, then press ENTER.
3 Select "OFF➞" using ↑/↓, then press ENTER.
4 Enter your 4-digit password using the number buttons, then press ENTER.

To change the password
1 Select "CUSTOM PARENTAL CONTROL" using ↑/↓, then press ENTER.
2 Select "PASSWORD➞" using ↑/↓, then press ENTER.
3 Enter your 4-digit password using the number buttons, then press ENTER.
The display for changing the password appears.
4 Enter a new 4-digit password using the number buttons, then press ENTER.
5 To confirm your password, re-enter it using the number buttons, then press ENTER.

Playing the disc for which the Custom Parental Control is set

1 Insert the disc.
The CUSTOM PARENTAL CONTROL display appears.



2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

If you forget your password
Enter the 6-digit number "199703" whenever the CUSTOM PARENTAL CONTROL display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

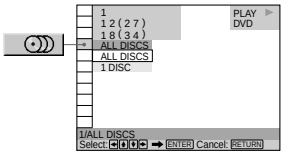
Note
Unless you enter the password, the player cannot play the disc for which the Custom Parental Control is set. When you do not know the password, press ⏏ and remove the disc.

Selecting the Disc Mode (1 Disc or All Discs)

DVD VIDEO CD CD

You can have the player play one disc or all of the discs in the player.
Before setting Program Play, Shuffle Play, or Repeat Play, you must select whether to set those play modes on one disc or all of the discs.

Select "1/ALL DISCS" after pressing DISPLAY.



■ 1/ALL DISCS
- ALL DISCS: will play all of the discs in the player in consecutive order. Also allows you to set Program Play, Shuffle Play or Repeat Play for all of the loaded discs.
- 1 DISC: will play the selected disc to the end. Also allows you to set Program Play, Shuffle Play or Repeat Play for 1 disc only.

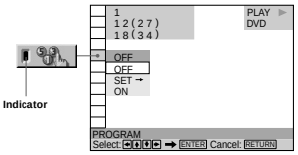
You can select the mode directly
Press 1/ALL on the player or 1/ALL DISCS on the remote. Each time you press the button, 1 DISC or ALL DISCS mode is selected.

Creating Your Own Program (Program Play)

DVD VIDEO CD CD

You can play the contents of the disc(s) in the order you want by arranging the order of the titles, chapters or tracks on the disc and create your own program. One program can be stored in the player and contain up to 99 titles, chapters and tracks. By selecting "1/ALL DISCS," you can create a program for one or all of the discs in the player.

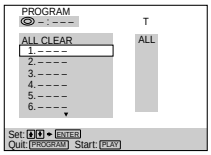
Select "PROGRAM" after pressing DISPLAY. When you select "ON," the "PROGRAM" indicator lights up in green.



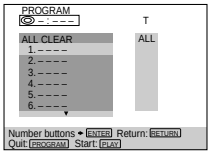
■ PROGRAM
The default setting is underlined.
- OFF: plays normally.
- SET➞: allows you to create your own program.
- ON: plays Program Play.

Creating the program

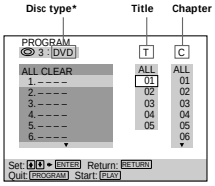
1 Select "SET➞" in "PROGRAM."
The programming display appears and "1" is highlighted.



2 Press ENTER.
It is ready to set the first disc of a title or track for Program Play.



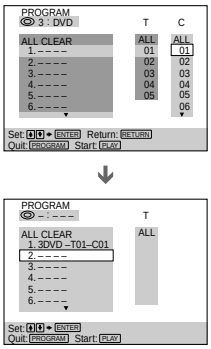
3 Select the disc you want to program using the number buttons or ↑/↓, then press ENTER.



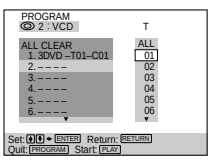
* "?" appears when the player has not loaded the disc information in the memory. If an empty tray is loaded, the disc type does not appear.

4 Select the title, chapter or track you want to program using ↑/↓, then press ENTER.
You can also use the number buttons and ENTER button to make a selection. In this case, the selected number is displayed on the screen.

■ When playing a DVD
For example, select title 1, chapter 1 in disc 3.
When both titles and chapters are recorded on the disc, select the title, then the chapter.



■ When playing a VIDEO CD or CD
For example, select track 1 in disc 2.



5 To program other discs, titles, chapters or tracks, repeat Steps 3 and 4.
The programmed discs, titles, chapters or tracks are displayed in the selected order.

6 Press ▷ to start Program Play.

To stop Program Play
Press CLEAR on the remote.

To cancel programming
Press PROGRAM on the remote.

To change the program
1 In Step 3, select the disc for which you want to change the program using ↑/↓.
2 Follow Step 4 for new title, chapter or track programming.

To cancel the programmed order
To cancel all the titles, chapters or tracks in the programmed order, select "ALL CLEAR".
To cancel the selected program, select the program using ↑/↓ then press CLEAR.

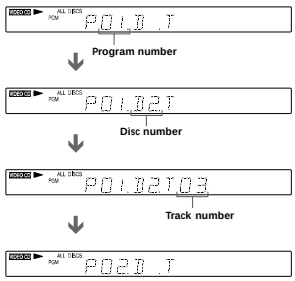
The program remains even after Program Play ends
When you press ▷, you can play the same program again.

You can do Repeat Play or Shuffle Play of the programmed titles, chapters or tracks
During Program Play, press REPEAT or SHUFFLE.
Or set "REPEAT" or "SHUFFLE" to "ON" in the Control Menu display.

You can select "PROGRAM" directly
Press PROGRAM on the remote.

For easier programming, load the disc information
Press LOAD when the player is in standby or stop mode so that the player reads and loads the disc information.

You can select discs, titles, chapters and tracks for the program by looking at the front panel display
You can program by looking at the front panel display instead of using the programming display on the TV screen.
When you select Track 3 in a VIDEO CD in disc tray 2 for Program 1, the front panel display will appear as follows:

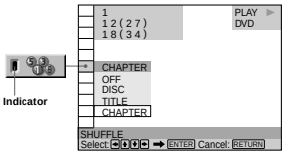


Notes
- The number of titles, chapters or tracks displayed are the same number of titles, chapters or tracks recorded on a disc.
- Program play is canceled when:
  – you open the disc tray
  – the player enters standby mode by pressing I/⏻ on the remote
  – you turn the power off by pressing ⏻ on the player
- Depending on the DVD, you may not be able to perform Program Play.
- If you are using the PBC playback function, you must first stop the disc before you can set a program.

Playing in Random Order (Shuffle Play) DVD VIDEO CD CD

You can have the player "shuffle" discs, titles, chapters or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order. By selecting "1/ALL DISCS," you can have the player shuffle one disc or all of the discs in the player.

Select "SHUFFLE" after pressing DISPLAY. When you select a shuffle mode other than "OFF," the "SHUFFLE" indicator lights up in green.



■ SHUFFLE
Selects the Shuffle Play setting.
The default settings are underlined.

When playing a DVD and when Program Play is set to OFF
- OFF: does not play the disc(s) in random order.
- DISC*: has the player "shuffle" discs and play them in a random order.
- TITLE: has the player "shuffle" titles and play them in a random order.
- CHAPTER: has the player "shuffle" chapters and play them in a random order.

When playing a VIDEO CD or CD (when Program Play is set to OFF)
- OFF: does not play the disc(s) in random order.
- DISC*: has the player "shuffle" discs and play them in a random order.
- TRACK: has the player "shuffle" tracks and play them in a random order.

When playing a VIDEO CD, CD or DVD (when Program Play is set to ON)
- OFF: does not play the disc(s) in random order.
- ON: has the player "shuffle" titles or tracks selected in Program Play and play them in a random order.

* Appears only when you select "ALL DISCS" in "1/ALL DISCS."

To stop Shuffle Play
Press CLEAR on the remote.

You can set Shuffle Play while the disc is stopped
After selecting the "SHUFFLE" option, press ⊳.
The player starts Shuffle Play.

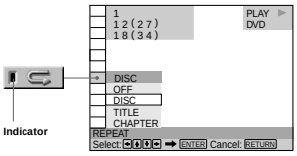
You can select "SHUFFLE" directly
Press SHUFFLE on the player or the remote. Each time you press the button, the item changes.

Notes
- Shuffle Play is canceled when:
  – you open the disc tray
  – the player enters standby mode by pressing I/⏻ on the remote
  – you turn the power off by pressing ⏻ on the player
- Depending on the DVD, you may not be able to perform Shuffle Play.
- Up to 96 chapters in a disc can be played in random order when "CHAPTER" is selected.
- You cannot perform Shuffle Play during PBC playback of VIDEO CDs (page 21).

Playing Repeatedly (Repeat Play) DVD VIDEO CD CD

You can play all discs, or all of the titles or tracks on a disc, or a single title, chapter or track repeatedly.
In Shuffle or Program Play mode, the player repeats the titles or tracks in the shuffled or programmed order. By selecting "1/ALL DISCS," you can have the player repeat one disc or all of the discs in the player.
You cannot perform Repeat Play during PBC playback of VIDEO CDs (page 21).

Select "REPEAT" after pressing DISPLAY. When you select a repeat mode other than "OFF," the "REPEAT" indicator lights up in green.



■ REPEAT
Selects the Repeat Play setting.
The default settings are underlined.

When playing a DVD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all titles on the selected disc when you select "1 DISC" in "1/ALL DISCS," and repeats all titles in all discs when you select "ALL DISCS."
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

When playing a VIDEO CD/CD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all tracks on the selected disc when you select "1 DISC" in "1/ALL DISCS," and repeats all tracks in all discs when you select "ALL DISCS."
- TRACK: repeats the current track.

When Program Play or Shuffle Play is on
- OFF: does not play repeatedly.
- ON: repeats Program Play or Shuffle Play.

To stop Repeat Play
Press CLEAR on the remote.

You can set Repeat Play while the disc is stopped
After selecting the "REPEAT" option, press ⊳.
The player starts Repeat Play.

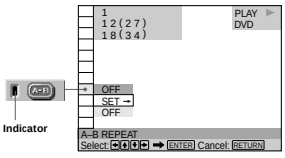
You can select "REPEAT" directly
Press REPEAT on the player or the remote. Each time you press the button, the item changes.

Notes
- Repeat play is canceled when:
  – you open the disc tray
  – the player enters standby mode by pressing I/⏻ on the remote
  – you turn the power off by pressing ⏻ on the player
- Depending on the DVD, you may not be able to perform Repeat Play.

Repeating a Specific Portion (A–B Repeat) DVD VIDEO CD CD

You can play a specific portion of a title, chapter or track repeatedly. This function is useful when you want to do such things as memorize lyrics.
During PBC Playback of VIDEO CDs (page 21), this function is available only while playing moving pictures.

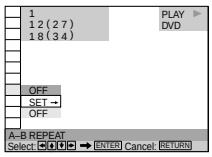
Select "A-B REPEAT" after pressing DISPLAY. During A-B Repeat Play, the "A-B REPEAT" indicator lights up in green.



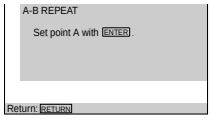
■ A-B REPEAT
The default setting is underlined.
- SET➡: sets the A and B points.
- OFF: does not play a specific portion of a title/chapter/track repeatedly.

Setting a portion for A-B repeat

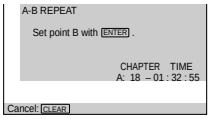
1 Select "A-B REPEAT" and press ENTER.



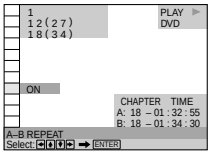
2 Select "SET➡" and press ENTER.
The A-B REPEAT setting display appears.



3 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



4 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A-B repeat play.



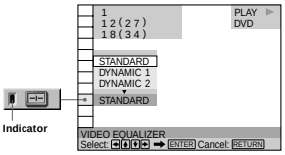
To stop A-B Repeat Play
Press CLEAR on the remote.

Notes
- You can set A-B Repeat for only one specific portion.
- A–B Repeat is canceled when:
  – you open the disc tray
  – the player enters standby mode by pressing I/⏻ on the remote
  – you turn the power off by pressing ⏻ on the player
- When you set A-B Repeat, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
- You may not be able to set A-B Repeat for some DVD or VIDEO CD scenes.
- You cannot set the start point (point A) on one disc and ending point (point B) on other disc.

Adjusting the Playback Picture (Video Equalizer) DVD VIDEO CD

You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want. Choose the video mode that suits the program you are watching.
When you select "MEMORY➡," you can make further adjustments to each element of the picture (color, brightness, etc.).

Select "VIDEO EQUALIZER" after pressing DISPLAY. When you select a setting other than "STANDARD," the "VIDEO EQUALIZER" indicator lights up in green.



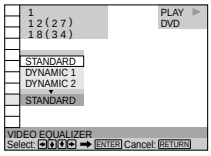
■ VIDEO EQUALIZER
Selects the video control setting.
The default setting is underlined.
- STANDARD: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: white colors become brighter and black colors become richer, and the color contrast is increased.
- MEMORY➡: adjusts the picture in greater detail.

When you watch a movie
CINEMA 1 or CINEMA 2 is recommended.

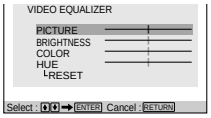
To adjust the picture items in MEMORY

You can adjust each element of the picture individually.
- PICTURE: changes the contrast
- BRIGHTNESS: changes the overall brightness
- COLOR: makes the colors deeper or lighter
- HUE: changes the color balance

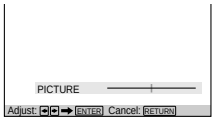
1 Select "VIDEO EQUALIZER" and press ENTER.



2 Select "MEMORY➡" and press ENTER.
The video equalizer display appears.

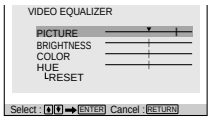


3 Select the picture item you want to adjust using ↑/↓, then press ENTER.
The adjustment bar of the selected item appears.
To cancel adjusting the picture, press ↶RETURN.



Adjusting the Playback Picture (Video Equalizer)

4 **Adjust the selected picture item using ←/→, then press ENTER.**
The setting is stored in memory.



5 **To adjust other items, repeat Steps 3 and 4.**

To exit the video equalizer display
Press RETURN.

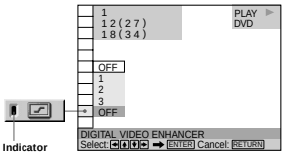
To reset the picture items
Select "RESET" in "MEMORY→."

Note
Only one set of "MEMORY→" adjustments can be stored. When you adjust the items again, the new setting erases the previous setting.

Enhancing the Playback Picture (Digital Video Enhancer) DVD VIDEO CD

The Digital Video Enhancer function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen.

Select "DIGITAL VIDEO ENHANCER" after pressing DISPLAY. When you select a level other than "OFF," the "DIGITAL VIDEO ENHANCER" indicator lights up in green.



■ DIGITAL VIDEO ENHANCER
Selects the level of enhancement. As the value increases, the outlines of images on your TV screen will become crisper.
Select the level that best suits the image on your TV screen.
The default setting is underlined.
- OFF: turns off the Digital Video Enhancer function.
- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.

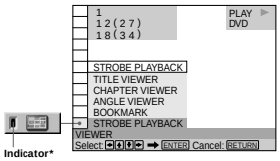
You can select "DIGITAL VIDEO ENHANCER" directly
Press DVE on the player or the remote. Each time you press the button, the level changes.

Note
Depending on the DVD/Video CD disc or the scene being played, noise found in the disc may become more apparent. If this happens, reduce the Digital Video Enhancer level.

Using the Quick Reference Screen (VIEWER) DVD VIDEO CD

You can divide the screen into 9 sections (quick reference screen) and enjoy the following functions.
- STROBE PLAYBACK
- TITLE VIEWER (DVD only)
- CHAPTER VIEWER (DVD only)
- TRACK VIEWER (VIDEO CD only)
- ANGLE VIEWER (DVD only)
- BOOKMARK

Select "VIEWER" after pressing DISPLAY.



* The indicator lights up when a bookmark is in memory.

Dividing a track into 9 sections (STROBE PLAYBACK) DVD VIDEO CD

You can display 9 consecutive sections of the disc on the screen. If you are playing a disc, you can change the speed of the images on the screen by turning the click shuttle. When you press II, 9 still images around the pause position are displayed.

Select "STROBE PLAYBACK" in "VIEWER" and press ENTER. Nine consecutive scenes appear on the screen.

To cancel watching the strobe play
Press RETURN.

Notes
- Depending on the disc, there are some scenes you may not be able to watch with the strobe play function.
- The sound is muted when using this function.

Scanning the title and chapter DVD VIDEO CD

You can check the first picture of titles, chapters or tracks of the disc, and start playback from the chosen title, chapter or track.

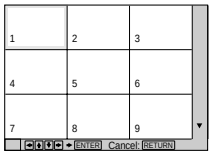
When playing a DVD, select "TITLE VIEWER" or "CHAPTER VIEWER" in "VIEWER" and press ENTER.

When playing a VIDEO CD, select "TRACK VIEWER" in "VIEWER" and press ENTER.

The screen will divide into 9 sections and show the first picture of each title, chapter or track.

To start playback from the selected picture
Select the picture using ←/↑/↓/→, then press ENTER. Playback starts from the selected picture.

When there are over 9 titles, chapters or tracks
▼ appears at the right bottom of the screen. Select the right bottom scene (the position 9) and use ↓ to display the next titles, tracks or chapters. To return to the previous scene, select the left top scene (the position 1) and press ↑.



You can check the number on the front panel display
The number of the title, chapter or track you selected is displayed on the front panel display.

To cancel scanning the title, chapter or track
Press RETURN.

Notes
- Depending on the disc, you may not be able to scan the title, chapter or track.
- The sound is muted when using this function.

Displaying different angles simultaneously DVD

With DVDs on which various angles (multi-angles) for a scene are recorded, you can display all of the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle. The angles are displayed on a screen divided in 9 sections.

Select "ANGLE VIEWER" in "VIEWER." The available angles appear on the screen.

To select one angle
Select the angle using ←/↑/↓/→, then press ENTER. The selected angle is displayed.

To cancel displaying multi-angles
Press RETURN.

You can check the angle number on the front panel display
The number of the angle you selected is displayed on the front panel display.

Notes
- If only one angle is recorded on the disc, then you will not be able to use this function.
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.
- When a scene for which various angles (multi-angles) are not recorded appears when using this function, the player returns to normal playback.
- The sound is muted when using this function.

Setting and selecting favorite scene (Bookmark) DVD VIDEO CD

You can have the player store specific portions of the disc in memory and play them immediately whenever you want (Bookmark). Up to 9 bookmarks per disc for up to 300 discs can be stored in memory.

Select "BOOKMARK" in "VIEWER." The bookmarks appear on the screen.

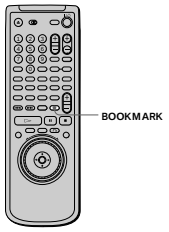
To start playback from the selected picture
Select the picture using ←/↑/↓/→, then press ENTER. Playback starts from the selected picture.

To cancel scanning the bookmark pictures
Press RETURN.

To reset the bookmark
Select the bookmark you want to reset using ←/↑/↓/→, then press CLEAR.

To reset all of the bookmarks for the player
Select "BOOKMARK RESET→" under "CUSTOM SETUP" in the setup display. For details on resetting all of the bookmarks for the player, see page 61.

Setting a bookmark
During playback, when you find a scene to be bookmarked, press BOOKMARK on the remote.



You can check the bookmark number on the front panel display
The number of the bookmark you selected is displayed on the front panel display.

Notes
- The player can store in memory the bookmarks of up to 300 discs. When you have the player store over 300 discs in memory, each new bookmark erases the oldest bookmark.
- Depending on the DVD, you may not be able to set the bookmark.
- Do not turn off the player by pressing ⏻. Doing so may cancel the settings. When you turn off the player, press ■ first to stop playback and then press I/⏻ on the remote. After the power indicator lights up in red and the player enters standby mode, press ⏻ on the player.
- The sound is muted when using this function.

Settings and Adjustments

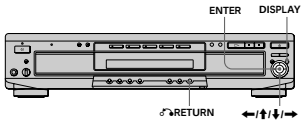
This chapter describes how to set and adjust the player using the on-screen setup menu. Most settings and adjustments are required to be set when you first use the player.
This chapter also describes how to set the remote for controlling the TV or the AV receiver (amplifier) or the CD changer.

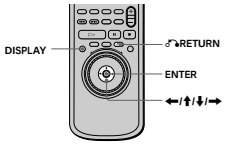
Using the Setup Display

DVD VIDEO CD CD

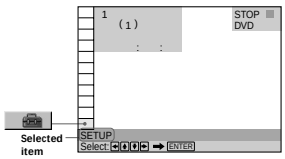
Using the setup display, you can do the initial setup, adjust the picture and sound and set the various outputs. You can also set a language for the subtitles and the setup display, limit playback by children, and so on.
For details on each setup display item, see pages 59 to 69.

Note
You can display the setup display only when the player is in stop mode.



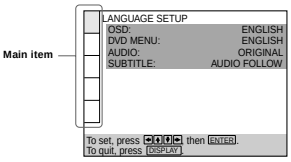


1 **Press DISPLAY and select "SETUP" using ↑/↓.**

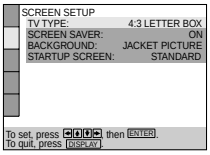


2 **Press ENTER.**
The setup display appears.

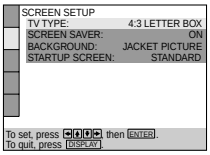
3 **Select the main item you want using ↑/↓.**



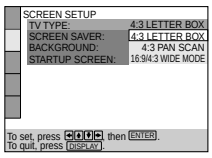
4 **Press ENTER.**
The selected main item is highlighted.



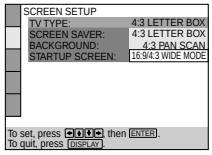
5 **Select the item you want using ↑/↓.**



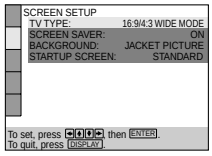
6 **Press ENTER.**



7 **Select the setting you want using ←/↑/↓/→.**



8 **Press ENTER.**



9 **Press DISPLAY.**
The setup display disappears.

10 **Press DISPLAY repeatedly to turn off the on-screen menu.**

To return to the previous screen
Press RETURN.

To quit while making a selection
Press DISPLAY.

Note
Some setup display items require operations other than selecting the setting. For details on these items, see the relevant pages.

Setup Display Item List

The default settings are underlined.

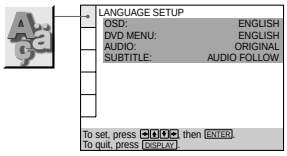
- **LANGUAGE SETUP** (page 59)
  - OSD: ENGLISH, FRENCH, SPANISH, PORTUGUESE
  - DVD MENU: ENGLISH, FRENCH, SPANISH, PORTUGUESE, GERMAN, ITALIAN, DUTCH, CHINESE, JAPANESE, DANISH, SWEDISH, FINNISH, NORWEGIAN, RUSSIAN, OTHERS ➡
  - AUDIO: ORIGINAL, (same as DVD MENU)
  - SUBTITLE: AUDIO FOLLOW, (same as DVD MENU)
- **SCREEN SETUP** (page 60)
  - TV TYPE: 4:3 LETTER BOX, 4:3 PAN SCAN, 16:9/4:3 WIDE MODE
  - SCREEN SAVER: ON, OFF
  - BACKGROUND: JACKET PICTURE, PICTURE MEMORY, GRAPHICS, BLUE, BLACK
  - STARTUP SCREEN: STANDARD, PICTURE MEMORY
- **CUSTOM SETUP** (page 61)
  - AUTO PLAY: OFF, TIMER, DEMO1, DEMO2
  - DIMMER: BRIGHT, DARK, OFF
  - PAUSE MODE: AUTO, FRAME
  - BOOKMARK RESET ➡
  - PARENTAL CONTROL ➡
  - PLAYBACK MEMORY: ON, OFF
  - TRACK SELECTION: OFF, AUTO
- **AUDIO SETUP** (page 65)
  - AUDIO ATT: OFF, ON
  - AUDIO DRC: STANDARD, TV MODE, WIDE RANGE
  - CENTER SPEAKER EQ: FLAT, ENHANCED, SOFT
  - DOWNMIX: DOLBY SURROUND, NORMAL
  - DIGITAL OUT: ON, OFF
    - DOLBY DIGITAL: D-PCM, DOLBY DIGITAL
    - DTS: D-PCM, DTS
    - 48kHz/96kHz PCM: 48kHz/16bit, 96kHz/24bit
- **SPEAKER SETUP** (page 67)
  - SIZE: FRONT, CENTER, REAR(REAR/SIDE), SUBWOOFER
  - DISTANCE: FRONT, CENTER, REAR
  - BALANCE: FRONT, REAR
  - LEVEL: CENTER, REAR, SUBWOOFER
  - TEST TONE: OFF, ON

Setting the Display Language or Sound Track (LANGUAGE SETUP)

DVD VIDEO CD CD

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.
The default settings are underlined.

Select "LANGUAGE SETUP" in the setup display.



Notes
- When you select a language that is not recorded on the DVD, one of the recorded languages is automatically selected for the "DVD MENU," "AUDIO" and "SUBTITLE" settings.
- Depending on the DVD, the player may not start playing with the selected language even when you select a language in "DVD MENU," "AUDIO" or "SUBTITLE."

■ OSD (On-Screen Display)
Selects the language for the on-screen display.
- ENGLISH
- FRENCH
- SPANISH
- PORTUGUESE

■ DVD MENU
Selects the language for the DVD menu.
- ENGLISH
- FRENCH
- SPANISH
- PORTUGUESE
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS➡

When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 81).
After you have made a selection, the language code (4 digits) is displayed.

■ AUDIO
Selects the language for the sound track.
- ORIGINAL: the language given priority in the disc
- ENGLISH
- FRENCH
- SPANISH
- PORTUGUESE
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS➡

When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 81).
After you have made a selection, the language code (4 digits) is displayed.

■ SUBTITLE
Selects the language for the subtitles.
- AUDIO FOLLOW*
- ENGLISH
- FRENCH
- SPANISH
- PORTUGUESE
- GERMAN
- ITALIAN
- DUTCH
- CHINESE
- JAPANESE
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- RUSSIAN
- OTHERS➡

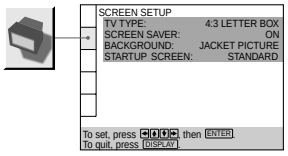
When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 81).
After you have made a selection, the language code (4 digits) is displayed.

* When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Settings for the Display (SCREEN SETUP) DVD VIDEO CD CD

"SCREEN SETUP" allows you to set the display according to the playback conditions.
The default settings are underlined.

Select "SCREEN SETUP" in the setup display.



■ TV TYPE
Selects the aspect ratio of the TV to be connected.
- 4:3 LETTER BOX: select this when you connect a normal TV to the player. Displays a wide picture with bands on the upper and lower portions of the screen.
- 4:3 PAN SCAN: select this when you connect a normal TV to the player. Displays the wide picture on the whole screen automatically and cuts off the portions that do not fit.
- 16:9/4:3 WIDE MODE: select this when you connect a wide-screen TV to the player or when you connect a TV with the WIDE MODE function to the player (displays a wide picture with bands displayed on the upper and lower portions of the screen).

4:3 LETTER BOX

4:3 PAN SCAN

16:9

4:3 WIDE MODE

Note
Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" and vice versa.

■ SCREEN SAVER
Turns on and off the screen saver. If you turn on the screen saver, the screen saver image appears when you leave the player or the remote in pause or stop mode for 15 minutes, or when you play back a CD for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged.
- ON: turns on the screen saver.
- OFF: turns off the screen saver.

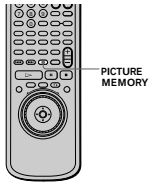
■ BACKGROUND
Selects the background color or picture on the TV screen in stop mode or while playing a CD.
- JACKET PICTURE: The jacket picture appears in the background, but only when the jacket picture is already recorded on the disc.
- PICTURE MEMORY: Your favorite picture appears in the background. For an explanation of how to store your favorite scene recorded on the disc for the background picture, see the following section "Storing a picture in memory."
- GRAPHICS: A preset picture stored in the player appears in the background.
- BLUE: The background color is blue.
- BLACK: The background color is black.

Note
If a disc which does not contain the jacket picture is played while "BACKGROUND" is set to "JACKET PICTURE," the picture stored in the player will automatically appear in the background.

■ STARTUP SCREEN
Selects the startup screen. The startup screen image you selected appears when you turn on the player.
- STANDARD: The standard startup screen in the player's memory appears.
- PICTURE MEMORY: Your favorite picture appears in the startup screen. For an explanation of how to store your favorite scene recorded on the disc for the startup screen, see the following section "Storing a picture in memory."
  If you select PICTURE MEMORY before setting a picture in memory, the standard startup screen will appear.

Storing a picture in memory

During playback, when you find the scene to be stored in memory, press PICTURE MEMORY on the remote.
The picture is stored in memory.

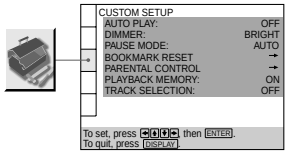


Notes
- The player can store only one scene in memory. The stored picture appears in both the background and the startup screen.
- Depending on the DVD, some scenes cannot be stored in memory when using the remote.
- When the picture is stored in memory by pressing PICTURE MEMORY, the picture stored before is erased.
- If you operate this player while the picture is being stored in memory, the player will fail to store the picture.

Custom Settings (CUSTOM SETUP)
DVD VIDEO CD CD

"CUSTOM SETUP" allows you to set the playback conditions.
The default settings are underlined.

Select "CUSTOM SETUP" in the setup display.



■ AUTO PLAY
Selects the Auto Play setting when you connect the AC power cord to the AC outlet.
- OFF: does not use "TIMER," "DEMO1" or "DEMO2" to start playback.
- TIMER: starts playing when the player is turned on, or at any time you want when connected to a timer (not supplied). Set the timer when the player is in standby mode (the power indicator lights up in red).
- DEMO1: starts playing the first demonstration automatically.
- DEMO2: starts playing the second demonstration automatically.

■ DIMMER
Adjusts the lighting of the front panel display.
- BRIGHT: makes the front panel display bright.
- DARK: makes the front panel display dark.
- OFF: turns off the lighting of the front panel display.

■ PAUSE MODE (DVD only)
Selects the picture in pause mode.
- AUTO: A picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
- FRAME: A picture including subjects that do not move dynamically is output with high resolution.

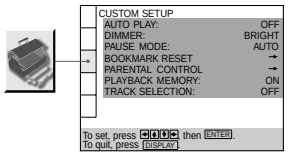
■ BOOKMARK RESET→
Select "BOOKMARK RESET." The BOOKMARK reset display appears. And then press ENTER to reset all bookmarks.

■ PARENTAL CONTROL→
Sets a password and playback limitation level for DVDs with playback limitation for children.
The same password is used for both Parental Control and Custom Parental Control (page 43) .
For details, see "Limiting Playback by Children (Parental Control) ."

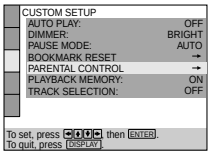
Limiting Playback by Children (Parental Control) DVD

Playback of some DVDs can be limited depending on the age of the users. The "Parental Control" function allows you to set a playback limitation level.

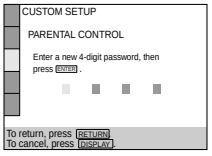
Select "CUSTOM SETUP" in the setup display.



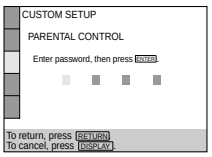
1 Select "PARENTAL CONTROL" using ↑/↓, then press ENTER.



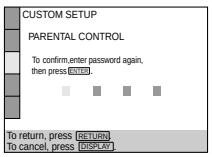
■ When you have not entered a password
The display for entering a password appears.



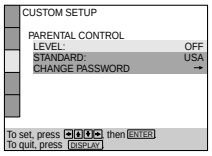
■ When you have already registered a password
The display for confirming the password appears. Skip Step 2.



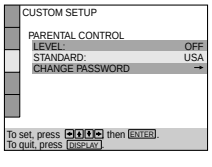
2 Enter a password in 4 digits using the number buttons, then press ENTER.
The digits change to asterisks (✱), and the display for confirming the password appears.



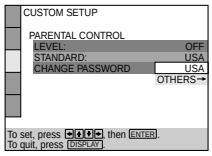
3 To confirm your password, enter it again using the number buttons, then press ENTER.
The display for setting the playback limitation level and changing the password appears.



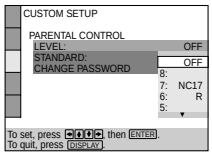
4 Select "STANDARD" using ↑/↓, then press →.



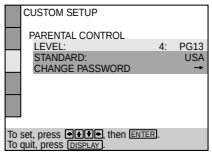
5 Select a geographic area as the playback limitation level standard using ↑/↓, then press →.
When you select "OTHERS→," select and enter the standard code in the table on the next page using the number buttons.



6 Select "LEVEL" using ↑/↓, then press →.



7 Select the level you want using ↑/↓, then press ENTER.



The lower the value, the more strict the limitation.

To return to the normal screen
Press DISPLAY.

To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 7, then press ▷.

To change the password

1 After Step 3, select "CHANGE PASSWORD" using ↑/↓, then press → or ENTER.
The display for changing the password appears.
2 Follow Steps 2 and 3 to enter a new password.

Playing a disc which is blocked by the playback limitation level

1 Insert the disc and press ▷.
The PARENTAL CONTROL display appears.
2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.
When you stop playing the DVD, the level returns to the original level.

If you forget your password
Enter the 6-digit number "199703" whenever the PARENTAL CONTROL display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Notes
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- If you do not set a password, you cannot change the settings for playback limitation.
- Depending on the DVD, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level.
When you stop playing the DVD, the level returns to the original level.
- The same password is used for both Parental Control and Custom Parental Control (page 43).

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
Hong Kong	2219
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Taiwan	2543
Thailand	2528
United Kingdom	2184

■ PLAYBACK MEMORY
The player can store the SUBTITLE, VIDEO EQUALIZER, and other settings of each disc for up to 300 discs (Playback Memory).
Set the Playback Memory function on or off.
- ON : stores the settings in memory when you eject the disc.
- OFF : does not store the settings in memory.

The following settings are stored in memory by the Playback Memory function.
– AUDIO (page 35)*
– SUBTITLE (page 37)*
– ANGLE (page 38)*
– VIRTUAL 3D SURROUND (page 39)
– VIDEO EQUALIZER (page 51)
– DIGITAL VIDEO ENHANCER (page 52)
* DVD only

Notes
- The player can store the settings of up to 300 discs. When you store the setting of disc number 301, the first disc setting is canceled.
- Depending on the DVD, the information stored in the disc takes priority over the Playback Memory settings and the function does not work.
- Do not turn off the player by pressing ⏻. Doing so may cancel the settings. When you turn off the player, press ■ first to stop playback and then press I/⏻ on the remote. After the power indicator lights up in red and the player enters standby mode, press ⏻ on the player.

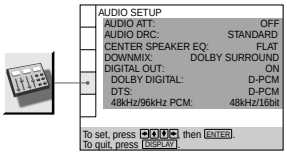
■ TRACK SELECTION
Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS or Dolby Digital format) are recorded.
- OFF : No priority given.
- AUTO : Priority given.

Notes
- When you set this item to "AUTO," the language may change depending on the "AUDIO" settings in "LANGUAGE SETUP." The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 59).
- If you set "DTS" in "AUDIO SETUP" to "D-PCM", the DTS sound track is not played even if you set this item to "AUTO" and the highest-numbered audio channel is recorded in DTS format.
- If PCM, DTS and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS and Dolby Digital sound tracks in this order.
- Depending on the DVD, the audio channel with priority may be predetermined. In this case, you cannot give priority to the DTS or Dolby Digital format by selecting "AUTO."

Settings for the Sound (AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback conditions.
The default settings are underlined.

Select "AUDIO SETUP" in the setup display.



■ AUDIO ATT (attenuation)
If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
Selects the setting of the output from the AUDIO OUT (1, 2) connectors according to the audio equipment to be connected.
- OFF: turns off the audio attenuation. Normally select this position.
- ON: reduces the audio output level so that no sound distortion occurs. Select this when the playback sound from the built-in TV speakers is distorted.

Note
The setting does not affect the output from the DIGITAL OUT OPTICAL and COAXIAL connectors.

■ AUDIO DRC (Dynamic Range Control) (DVD only)
Makes the sound clear when the volume is turned down when playing a DVD. This function works only when you play a DVD which has the AUDIO DRC function. This affects the output from the DIGITAL OUT connectors only when "DOLBY DIGITAL" is set to "D-PCM" and "DTS" to "D-PCM" in "DIGITAL OUT."
- STANDARD: Normally select this position.
- TV MODE: makes the low sounds clear even if you turn the volume down. It is especially recommended when you listen to the sound using the speakers of the TV.
- WIDE RANGE: It gives you the feeling of being at a live performance. This function only works when you are playing a Dolby Digital disc and is more effective when you connect 6 speakers using the 5.1 channel connectors. When you use high quality speakers, it is even more effective.

Note
When you play DVDs without the AUDIO DRC function, there may be no effect on the sound.

■ CENTER SPEAKER EQ (equalizer)
Makes the spoken track clear by changing the frequency response when speech is difficult to hear. A center speaker must be connected to the CENTER connector of 5.1CH OUTPUT for this function to work.
- FLAT: outputs the spoken track as it was recorded.
- ENHANCED: enhances the spoken track only.
- SOFT: makes the sound softer by rounding out the sound frequency above 8 kHz. Select this when the spoken track sounds shrill.

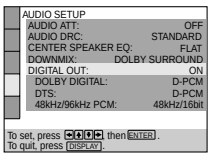
■ DOWNMIX
Switches the mixing down methods when you play a DVD on which rear signal components such as LS, RS, or S are recorded in Dolby Digital or DTS format. For details on the rear signal components, see "Displaying the audio information of the disc" (page 36).
This affects the output from the DIGITAL OUT connectors only when "DOLBY DIGITAL" is set to "D-PCM" and "DTS" to "D-PCM" in "DIGITAL OUT."
- DOLBY SURROUND: when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic). The output signals which reproduce the Dolby Surround (Pro Logic) effect are mixed down to 2 channels.
- NORMAL: when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic). The signals without the Dolby Surround (Pro Logic) effect are output.

■ DIGITAL OUT
Selects output signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- ON: Normally select this position. When you select "ON," set "DOLBY DIGITAL," "DTS" and "48kHz/96kHz PCM." For details on setting these items, see "Setting the Digital Output Signal."
- OFF: when the player does not output the sound signals via the DIGITAL OUT OPTICAL and COAXIAL connectors, the influence of the digital circuit upon the analog circuit is at a minimum.

Note
When you select "OFF," you cannot set "DOLBY DIGITAL," "DTS" and "48kHz/96kHz PCM."

Setting the Digital Output Signal

Switches the methods of outputting audio signals when you, connect 1. a digital component such as a receiver (amplifier) having a digital connector, 2. an audio component having a built-in decoder (Dolby Digital or DTS), 3. a DAT or MD via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord. For connection details, see page 11.
You cannot adjust "DOLBY DIGITAL," "DTS" and "48kHz/96kHz PCM" if you set "DIGITAL OUT" to "OFF."



■ DOLBY DIGITAL
Selects the Dolby Digital signals to be output via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- D-PCM (Downmix PCM): when the player is connected to an audio component lacking a built-in Dolby Digital decoder. If you play Dolby Digital sound tracks, the output audio signals are mixed down to 2 channels. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP."
- DOLBY DIGITAL: when the player is connected to an audio component with a built-in Dolby Digital decoder. If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set this. Otherwise, when you play the Dolby Digital sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■ DTS
Selects the DTS signals to be output via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- D-PCM: when the player is connected to an audio component lacking a built-in DTS decoder. If you play DTS sound tracks, the player outputs stereo signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- DTS: when the player is connected to an audio component having a built-in DTS decoder.
If the player is connected to an audio component lacking a built-in DTS decoder, do not set this. Otherwise, when you play the DTS sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

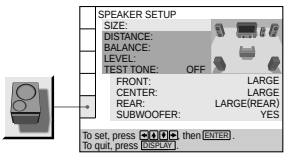
■ 48kHz/96kHz PCM (DVD only)
Selects the sampling frequency of the audio signal to be output via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- 48kHz/16bit: The audio signals of DVDs are always converted to 48 kHz/16 bit.
- 96kHz/24bit: All types of signals including 96 kHz/24 bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48 kHz/16 bit.

Notes
- If you select "96kHz/24bit" when a receiver (amplifier) which cannot accept 96 kHz is connected to the player, no sound or a loud noise will come out from the speakers.
- Even if you set "48kHz/96kHz PCM" in "AUDIO SETUP" to "96kHz/24bit," the sampling frequency is converted to 48 kHz/16 bit when a VIRTUAL 3D SURROUND mode is selected.
- The analog audio signals from the AUDIO OUT connectors are not affected by this setting and keep their original sampling frequency level.

Settings for the Speakers (SPEAKER SETUP)

To obtain the best possible surround sound when you use the 5.1CH OUTPUT connectors, use the SPEAKER SETUP display to first specify the size of the speakers you have connected and their distance from your listening position. Then set the balance and level. Use the test tone to adjust the volume of the speakers to the same level.
For speaker hookup instructions, see page 12.
The default settings are underlined.

Select "SPEAKER SETUP" in the setup display.



■ SIZE
Selects the size of the speakers to be connected.
- FRONT
  — LARGE: Normally select this.
  — SMALL: When the sound cracks or the surround sound effects are difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from the subwoofer.
- CENTER
  — NONE: If you do not connect a center speaker, select this.
  — LARGE: Normally select this.
  — SMALL: When the sound cracks, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the center speaker from other speakers .
- REAR
  — NONE: If you do not connect rear speakers, select this.
  — LARGE (REAR/SIDE): Normally select either of these according to the rear speaker's position*.
  — SMALL (REAR/SIDE): When the sound cracks or the surround sound effects are difficult to hear, select either of these according to the rear speaker's position*. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the rear speaker from other speakers .

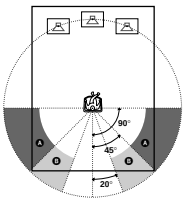
- SUBWOOFER
  — NONE: If you do not connect a subwoofer, select this. This activates the Dolby Digital bass redirection circuitry and outputs the LFE signals from the front speakers as long as the front speaker size is set to "LARGE."
  — YES: If you connect a subwoofer, select this to output the LFE (low frequency effect) channel from the subwoofer.

*** Rear speaker position**

Specify the location of the rear speakers for correct "VIRTUAL REAR SHIFT," "VIRTUAL MULTI REAR" and "VIRTUAL MULTI DIMENSION" effects. These effects can be found in "VIRTUAL 3D SURROUND" of the Control Menu display.

- SIDE: If the location of the rear speakers corresponds to section Ⓐ in the illustration below.
- REAR: If the location of the rear speakers corresponds to section Ⓑ in the illustration below.

This setting affects only the "VIRTUAL REAR SHIFT," "VIRTUAL MULTI REAR" and "VIRTUAL MULTI DIMENSION" mode.

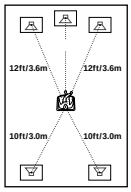


Notes

- The cut off frequency for the subwoofer is fixed at 120 Hz.
- If your speakers are too small to reproduce low bass frequencies, please set all speaker settings to "SMALL" and utilize a subwoofer for low frequency sound.

■ DISTANCE

The default distance setting for the speakers in relation to the listening position is shown below.



You can vary the distance of each speaker as follows. The default adjustments are in parentheses. Be sure to change the value in the setup display when you move the speakers.

- FRONT (12ft/3.6m)
  Front speaker distance can be set in 1 foot (0.3 meter) increments from 4 to 50 feet (1.2 to 15.2 meters). Distance is measured from the front speaker to the listening position.
- CENTER (12ft/3.6m)
  Center speaker distance can be set in 1 foot (0.3 meter) increments. Place the center speaker directly between the front speakers. You can move it up to 2 feet (0.6 meter) backwards or 5 feet (1.5 meters) forwards if necessary.
- REAR (10ft/3.0m)
  Rear speaker distance can be set in 1 foot (0.3 meter) increments. Place the speakers behind the listening position at a distance equal to the front speaker distance. If necessary you can move the rear speakers up to 16 feet (5 meters) closer to your listening position.

To return to the default setting

Select the item, then press CLEAR.

Notes

- If each of the front or rear speakers are not placed at an equal distance from your listening position, set the distance according to the closest speaker.
- Do not place the rear speakers farther away from your listening position than the front speakers.

■ BALANCE

You can vary the balance of the left and right speakers as follows. Be sure to set "TEST TONE" to "ON" for easy adjustment (see ■ TEST TONE below). The default adjustments are in parentheses.

- FRONT (0dB)
  Adjust the balance between the front left and right speakers (–6dB [L] to +6dB [R], 0.5dB increments).
- REAR (0dB)
  Adjust the balance between the rear left and right speakers (–6dB [L] to +6dB [R], 0.5dB increments).

To return to the default setting

Select the item, then press CLEAR.

■ LEVEL

You can vary the level of each speaker as follows. The front speaker level becomes the criterion for adjusting the other speakers. Be sure to set "TEST TONE" to "ON" for easy adjustment (see ■ TEST TONE below). The default adjustments are in parentheses.

- CENTER (0dB)
  Adjust the level of the center speaker (–6dB to +6dB, 0.5dB increments).
- REAR (0dB)
  Adjust the level of the rear speakers (–6dB to +6dB, 0.5dB increments).
- SUBWOOFER (0dB)
  Adjust the level of the subwoofer (–10dB to +10dB, 0.5dB increments).

To return to the default setting

Select the item, then press CLEAR.

■ TEST TONE

The speakers will emit a test tone. Use this when you use the 5.1CH OUTPUT connectors and adjust the BALANCE and LEVEL.

- OFF: The test tone is not emitted from the speakers.
- ON: The test tone is emitted from each speaker in sequence. When you select one of the "SPEAKER SETUP" items, the test tone is emitted from both left and right speakers simultaneously.

Note

When you adjust the speaker settings, the sound cuts off for a moment.

Adjusting the speaker volume

1 After you stop playback, select "SPEAKER SETUP" in the setup display.

2 Select "TEST TONE" and set "TEST TONE" to "ON."
You will hear the test tone from each speaker in sequence.

3 From your listening position, select "BALANCE" or "LEVEL" and adjust the value of "BALANCE" using ←/→ and "LEVEL" using ↑/↓.
The test tone is emitted from both left and right speakers simultaneously.

4 Select "TEST TONE" and set "TEST TONE" to "OFF" to turn off the test tone.

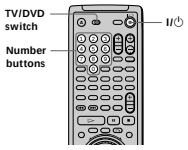
To adjust the volume of all the speakers at one time

Use the receiver's (amplifier's) volume control.

Controlling Your TV or AV Receiver (Amplifier) with the Supplied Remote

By adjusting the remote signal, you can control your TV or AV receiver (amplifier) with the supplied remote.

Controlling TVs with the remote



1 Slide the TV/DVD switch to TV.

2 Hold down I/⏻, and enter your TV's manufacturer's code (see the table) using the number buttons.

3 Release I/⏻.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

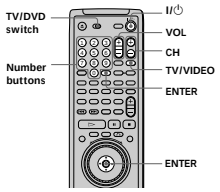
Manufacturer	Code number
Sony (default)	01
Akai	04
AOC	04
Centurion	12
Coronado	03
Curis-Mathes	12
Daytron	12
Emerson	03,04,14
Fisher	11
General Electric	06, 10
Gold Star	03,04,17
Hitachi	02,03
J.C.Penney	04,12
JVC	09
KMC	03
Magnavox	03,08,12
Marantz	04,13
MGA/Mitsubishi	04,12,13,17
NEC	04, 12
Panasonic	06,19
Philco	03,04
Philips	08
Pioneer	16
Portland	03
Quasar	06,18
Radio Shack	05,14
RCA	04,10
Sampo	12
Sanyo	11
Scott	12
Sears	07,10,11
Sharp	03,05,18
Sylvania	08,12
Teknika	03,08,14
Toshiba	07
Wards	03,04,12
Yorx	12
Zenith	15

Notes

- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Reset the appropriate code number.

Controlling the TV

You can control your TV using the buttons below. When you set the TV/DVD switch to TV, you can also control the number, I/⏻ and ENTER buttons.

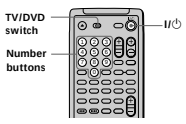


By pressing	You can
I/⏻	Turn the TV on or off
TV/VIDEO	Switch the TV's input source between the TV and other input sources
VOL	Adjust the volume of the TV
CH	Select the channel of the TV
Number buttons and ENTER	Select the channel of the TV

Note

Depending on the TV, you may not be able to control your TV or to use some of the buttons above.

Controlling AV receivers (amplifiers) with the remote



1 Slide the TV/DVD switch to DVD.

2 Hold down I/⏻, and enter your AV receiver's manufacturer's code (see the table) using the number buttons.

3 Release I/⏻.

Code numbers of controllable AV receivers (amplifier)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV receiver (amplifier).

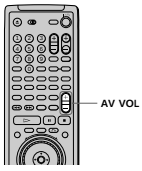
Manufacturer	Code number
Sony	91 (default), 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Notes

- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Reset the appropriate code number.

Controlling the AV receiver (amplifier)

You can change the volume of the AV receiver (amplifier) using AV VOL.



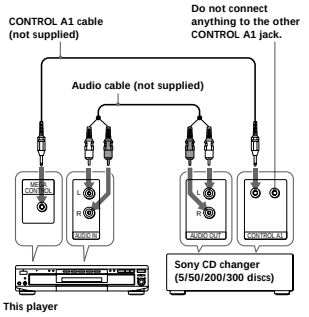
Notes

- Depending on the AV receiver (amplifier), you may not be able to control your AV receiver (amplifier).
- You can control the AV receiver (amplifier) regardless of the position of the TV/DVD switch.

Controlling the CD Changer (Mega Control)

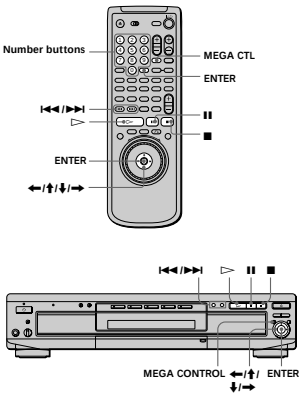
You can control a Sony CD changer of 5/50/200/300 discs connected to the MEGA CONTROL jack of the player.

Connecting the CD changer



Controlling the CD changer

The controls indicated below are effective while the MEGA CONTROL button is lit.



1 **Set the command mode selector of the CD changer to "CD 3."**

2 **Turn on the player and the CD changer.**

3 **Press MEGA CONTROL (MEGA CTL).**
The MEGA CONTROL button on the front panel lights up and the display shows the current disc number in the CD changer.

4 **Select the play mode you want on the CD changer.**

5 **Press ▷ on the player to start playing.**
Playback starts and the display shows the current disc and track numbers and the playing time of the track. While the MEGA CONTROL button on the front panel is lit, you can control the CD changer with the controls on the player as follows:

To	Operation
Select a disc in continuous play mode	Press the number button on the remote and ENTER, or ↑/↓ and ENTER.
Skip by 10 discs in continuous play mode	Press ←/→.
Stop	Press ■.
Pause	Press II.
Resume play after pause	Press II or ▷.
Go to the next track	Press ▶▶I.
Go back to the preceding track	Press I◀◀.

To control the player again

Press MEGA CONTROL (MEGA CTL).
The MEGA CONTROL (MEGA CTL) button on the player turns off and you can control the player.

Notes

- Connect only a Sony 5/50/200/300 CD changer to the MEGA CONTROL jack.
- You cannot locate a particular point on a CD's track using the controls on the player.
- Depending on the CD changer, some controls on the player may not operate the CD changer as they do the player.
- You cannot control the player when the MEGA CONTROL button on the front is lit.
- The player will not enter Resume Play after the MEGA CONTROL button on the front has been turned on and off.
- You cannot control the CD changer right after turning on the player or connecting the CD changer. Wait a few seconds until the player recognizes the CDs.
- When the MEGA CONTROL button is lit, you cannot use the Control menu.

Self-diagnosis function

When the self-diagnosis function activates to prevent the player from malfunctioning, a five-character service number (combination of a letter and digits) flashes on the screen and on the front panel display. In this case, check the following table.

First three characters	Cause and/or Corrective Action
C13	• The disc is dirty. ➡ Clean the disc with a cleaning cloth. (page 6)
C31	• The disc is not inserted correctly. ➡ Open the disc tray and insert the disc correctly.
Exx (xx is any number)	• To prevent a malfunction, the player has performed the self-diagnosis function. ➡ When you contact your Sony dealer or local authorized Sony service facility, give the 5-character service number. (example: E:61:10)

Language Code List

For details, see pages 37, 59.

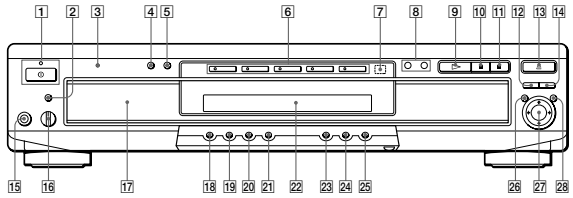
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1186	Scots Gaelic	1350	Malayalam	1513	Siswati
1028	Abkhazian	1194	Galician	1352	Mongolian	1514	Sesotho
1032	Afrikaans	1196	Guarani	1353	Moldavian	1515	Sundanese
1039	Amharic	1203	Gujarati	1356	Marathi	1516	Swedish
1044	Arabic	1209	Hausa	1357	Malay	1517	Swahili
1045	Assamese	1217	Hindi	1358	Maltese	1521	Tamil
1051	Aymara	1226	Croatian	1363	Burmese	1525	Telugu
1052	Azerbaijani	1229	Hungarian	1365	Nauru	1527	Tajik
1053	Bashkir	1233	Armenian	1369	Nepali	1528	Thai
1057	Byelorussian	1235	Interlingua	1376	Dutch	1529	Tigrinya
1059	Bulgarian	1239	Interlingue	1379	Norwegian	1531	Turkmen
1060	Bihari	1245	Inupiak	1393	Occitan	1532	Tagalog
1061	Bislama	1248	Indonesian	1403	(Afan) Oromo	1534	Setswana
1066	Bengali; Bangla	1253	Icelandic	1408	Oriya	1535	Tonga
1067	Tibetan	1254	Italian	1417	Punjabi	1538	Turkish
1070	Breton	1257	Hebrew	1428	Polish	1539	Tsonga
1079	Catalan	1261	Japanese	1435	Pashto; Pushto	1540	Tatar
1093	Corsican	1269	Yiddish	1436	Portuguese	1543	Twi
1097	Czech	1283	Javanese	1463	Quechua	1557	Ukrainian
1103	Welsh	1287	Georgian	1481	Rhaeto-Romance	1564	Urdu
1105	Danish	1297	Kazakh	1482	Kirundi	1572	Uzbek
1109	German	1298	Greenlandic	1483	Romanian	1581	Vietnamese
1130	Bhutani	1299	Cambodian	1489	Russian	1587	Volapük
1142	Greek	1300	Kannada	1491	Kinyarwanda	1613	Wolof
1144	English	1301	Korean	1495	Sanskrit	1632	Xhosa
1145	Esperanto	1305	Kashmiri	1498	Sindhi	1665	Yoruba
1149	Spanish	1307	Kurdish	1501	Sangho	1684	Chinese
1150	Estonian	1311	Kirghiz	1502	Serbo-Croatian	1697	Zulu
1151	Basque	1313	Latin	1503	Singhalese	1703	Not specified
1157	Persian	1326	Lingala	1505	Slovak		
1165	Finnish	1327	Laothian	1506	Slovenian		
1166	Fiji	1332	Lithuanian	1507	Samoan		
1171	Faroese	1334	Latvian; Lettish	1508	Shona		
1174	French	1345	Malagasy	1509	Somali		
1181	Frisian	1347	Maori	1511	Albanian		
1183	Irish	1349	Macedonian	1512	Serbian		

Index to Parts and Controls

Refer to the pages indicated in parentheses for details.

Front Panel



1 ⏻ **(power) button and indicator (16)**
Disconnects the power of the player or places the player in standby mode.

2 **VIRTUAL SURROUND HEADPHONES button and indicator (41)**
Press to turn on the VIRTUAL SURROUND HEADPHONES function.
The indicator lights up when it is on.

3 **MULTICHANNEL indicator**
Lights up when:
– playing back a Dolby Digital soundtrack on the DVD
– playing back a DTS soundtrack on the DVD
– the disc is not inserted

4 **DVE (Digital Video Enhancer) button and indicator (52)**
Press to select a Digital Video Enhancer level.
The indicator lights up for every selected item except "OFF."

5 **VIRTUAL 3D SURROUND button and indicator (41)**
Press to select the desired "VIRTUAL 3D SURROUND" item.
The indicator lights up for every selected item except "OFF."

6 **DISC SELECT 1 – 5 buttons and indicators (18)**
Selects a disc. The indicator lights up in green when a disc is being played or is loaded, and lights up in amber if the disc is waiting to be loaded. The indicator does not light up when the loaded tray is empty or if the disc cannot be played.

7 **(remote sensor) (7)**
Accepts the remote control signals.

8 **I◄◄ /►►I PREV/NEXT (previous/next) buttons (17)**
Press to go to the next chapter or track, or to go back to the previous chapter or track.

9 ▷ **(play) button (16)**
Plays a disc.

10 **II (pause) button (17)**
Pauses playing a disc.

11 **■ (stop) button (17, 19)**
Stops playing a disc.

12 **EXCHANGE button (22)**
Press to change discs during playback.

13 ⏏**OPEN/CLOSE button (16)**
Opens or closes the disc tray.

14 **DISC SKIP button (16, 22)**
Press to turn the disc tray to place other discs.

15 **PHONES connector (16)**
Connect the headphones to this connector.

16 **PHONES LEVEL control (16)**
Adjusts the headphone volume.

17 **Disc tray (16)**
Place the discs on the tray.

18 **SHUFFLE button (48)**
Displays the "SHUFFLE" display on the TV screen.

19 **REPEAT button (49)**
Displays the "REPEAT" display on the TV screen.

20 **1/ALL button (45)**
Selects 1 DISC or ALL DISCS play mode.

21 **LOAD button (25)**
Reads the information of the discs loaded in sequence.

22 **Front Panel Display (23)**
Indicates the playing time, etc.

23 **TITLE button (20)**
Displays the title menu on the TV screen.

24 **DVD MENU button (21)**
Displays the DVD menu on the TV screen.

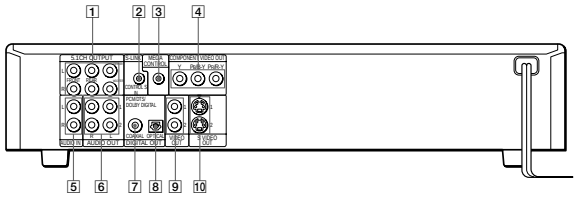
25 **RETURN button (22, 29)**
Press to return to the previously selected screen, etc.

26 **MEGA CONTROL button and indicator (72)**
Press to control the connected CD changer.

27 **←/↑/↓/→/ENTER button**
Selects and executes the items or settings.

28 **DISPLAY button (28)**
Displays the Control Menu display on the TV screen to set or adjust the Control Menu items.

Rear Panel



1 **5.1CH OUTPUT connectors (13)**
Connect to a receiver (amplifier) having 5.1 channel input connectors.

2 **S-LINK connector (8)**
Connect to the S-link connector on an external component.

3 **MEGA CONTROL connector (72)**
Connect to the control connector on a Sony CD changer of 5/50/200/300 discs.

4 **COMPONENT VIDEO OUT connectors (9)**
Connects to a monitor or projector having component video input connectors (Y, PB/B-Y, PR/R-Y) that conform to output signals from the player.

5 **AUDIO IN (L, R) connectors (72)**
Connect to the audio output on a Sony CD changer of 5/50/200/300 discs.

6 **AUDIO OUT R (right)/L (left) 1/2 connectors (8, 10)**
Connect to the audio input connector on your TV or receiver (amplifier).

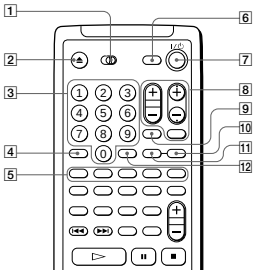
7 **DIGITAL OUT COAXIAL connector (10)**
Connect to an audio component using a coaxial digital connecting cord.

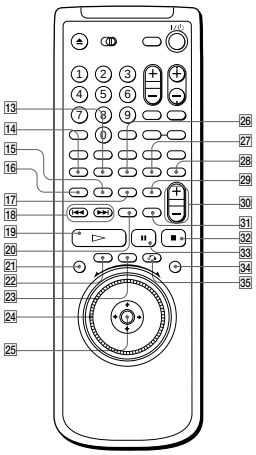
8 **DIGITAL OUT OPTICAL connector (10)**
Connect to an audio component using an optical digital connecting cord. Take off the cap.

9 **VIDEO OUT 1/2 connectors (8)**
Connect to the video input connector on your TV or monitor.

10 **S VIDEO OUT 1/2 connectors (8, 10)**
Connect to the S video input connector on your TV or monitor.

Remote





1 **TV/DVD switch (70)**
Selects to control the player or the TV with the remote.

2 ⏏**OPEN/CLOSE button (17)**
Opens or closes the disc tray.

3 **Number buttons**
Selects the items or settings.

4 **CLEAR button (47 through 50)**
Press to return to continuous play, etc.

5 **DISC 1 – 5 buttons (17)**
Selects a disc.

6 **DISC EXPLORER button (25)**
Displays the disc information such as jacket picture and disc memo.

7 **I/⏻ (on/standby) button (16)**
Press to turn on the player or place it in standby mode after power is connected by pressing ⏻ on the player.

8 **TV (television) operation buttons (71)**
Controls TVs.

9 **MEGA CTL (control) button (72)**
Press to control the connected CD changer.

10 **TIME/TEXT button (23)**
Displays the playing time of the disc, etc., on the front panel display.

11 **INPUT button (35)**
Press when labeling a disc.

12 **ENTER button**
Executes the items or settings.

13 **PROGRAM button (47)**
Displays the "PROGRAM" display on the TV screen.

14 **SHUFFLE button (48)**
Displays the "SHUFFLE" display on the TV screen.

15 **ANGLE button (38)**
Changes the angles when playing a DVD.

16 **AUDIO button (36)**
Changes the sound while playing a DVD or VIDEO CD.

17 **SUBTITLE button (37)**
Changes the subtitles when playing a DVD.

18 **I◄◄ /►►I PREV/NEXT (previous/next) buttons (17)**
Press to go to the next chapter or track, or to go back to the previous chapter or track.

19 ▷**PLAY button (16)**
Plays a disc.

20 **PICTURE MEMORY button (61)**
Press to store a picture in memory.

21 **DISPLAY button (28)**
Displays the Control Menu display on the TV screen to set or adjust the Control Menu items.

22 **TITLE button (20)**
Displays the title menu on the TV screen.

23 **DVD MENU button (21)**
Displays the DVD menu on the TV screen.

24 **Click shuttle (18)**
Changes the playback speed.

25 **←/↑/↓/→/ENTER buttons**
Selects and executes the items or settings.

26 **REPEAT button (49)**
Displays the "REPEAT" display on the TV screen.

27 **1/ALL DISCS button (45)**
Selects 1 DISC or ALL DISCS play mode.

28 **DVE (Digital Video Enhancer) button (52)**
Press to select the Digital Video Enhancer level.

29 **LOAD button (25)**
Reads the information of the discs loaded in sequence.

30 **AV VOL button (71)**
Change the sound volume of the AV receivers (amplifiers).

31 **BOOKMARK button (54)**
Press to set a bookmark.

32 **■STOP button (17, 19)**
Stops playing a disc.

33 **IIPAUSE button (17)**
Pauses playing a disc.

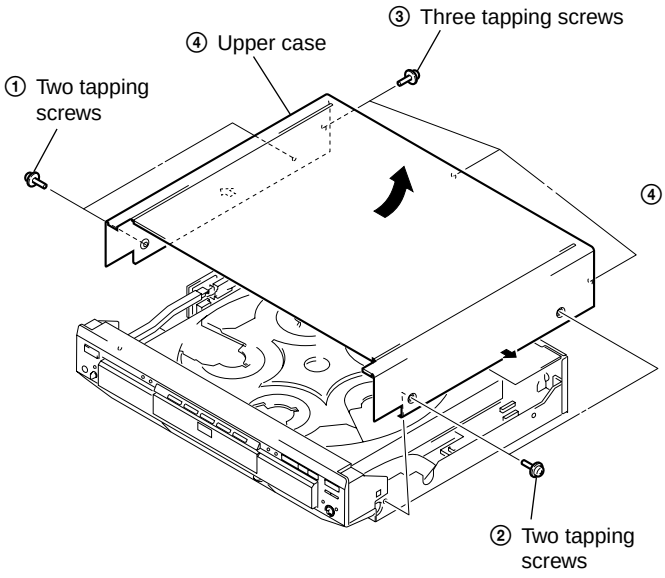
34 **JOG button and indicator (18)**
Press to play a disc frame by frame.

35 **RETURN button (22, 29)**
Press to return to the previously selected screen, etc.

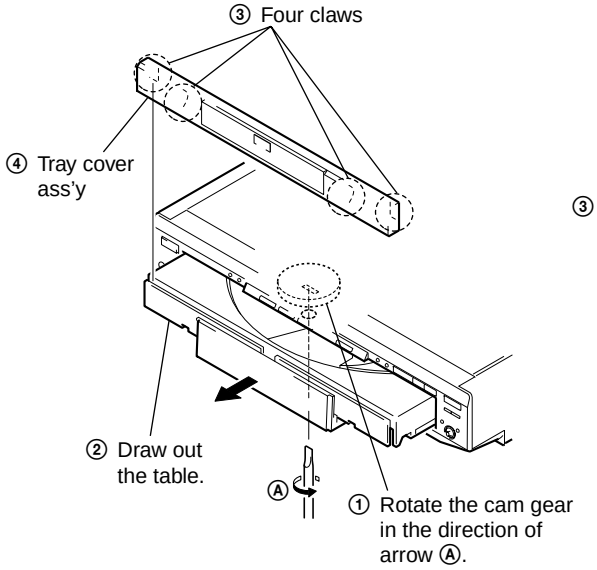
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

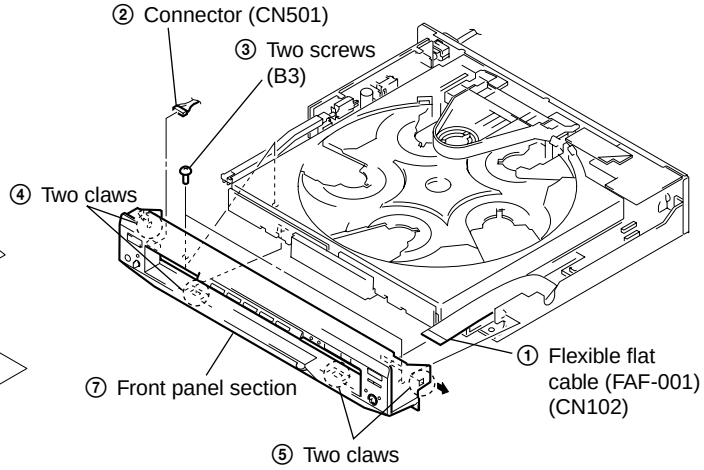
2-1. UPPER CASE REMOVAL



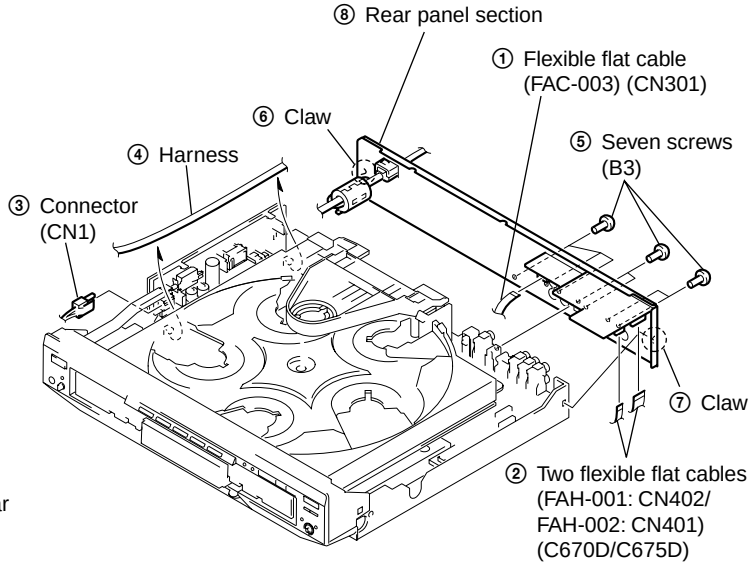
2-2. TRAY COVER ASS'Y REMOVAL



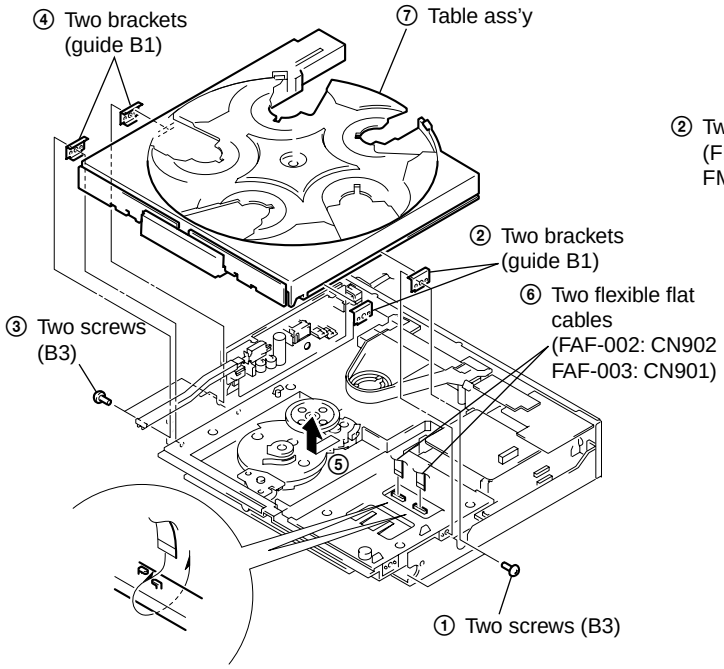
2-3. FRONT PANEL SECTION REMOVAL



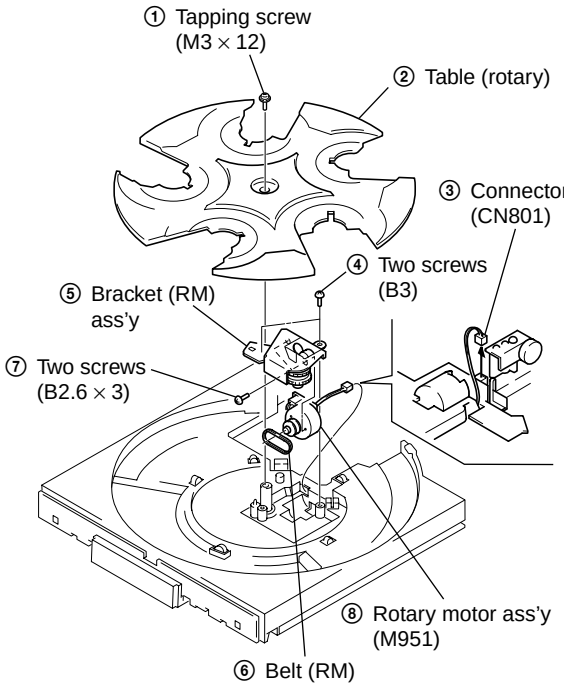
2-4. REAR PANEL SECTION REMOVAL



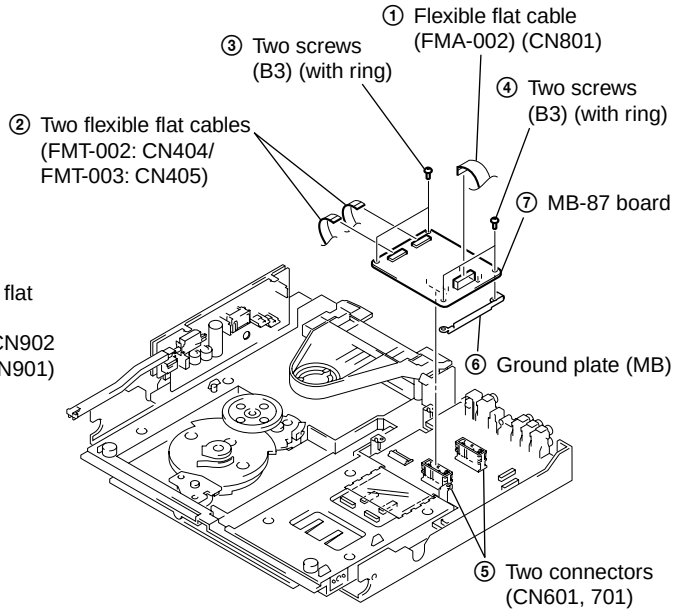
2-5. TABLE ASS'Y REMOVAL



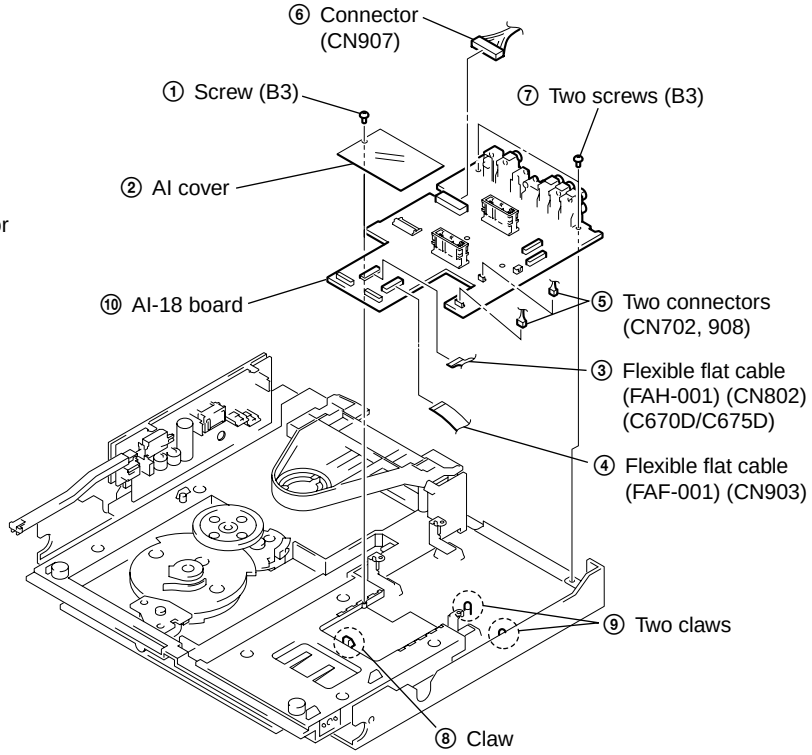
2-6. ROTARY MOTOR ASS'Y (M951) REMOVAL



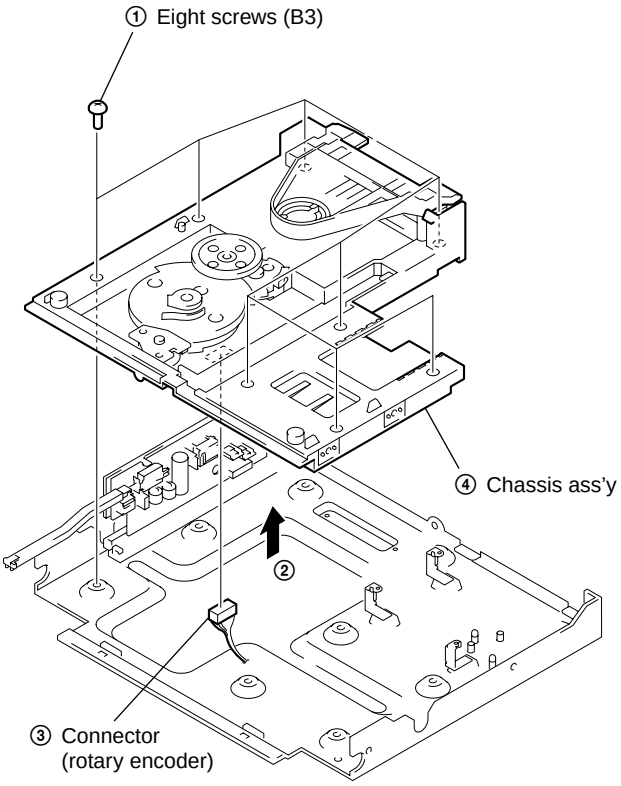
2-7. MB-87 BOARD REMOVAL



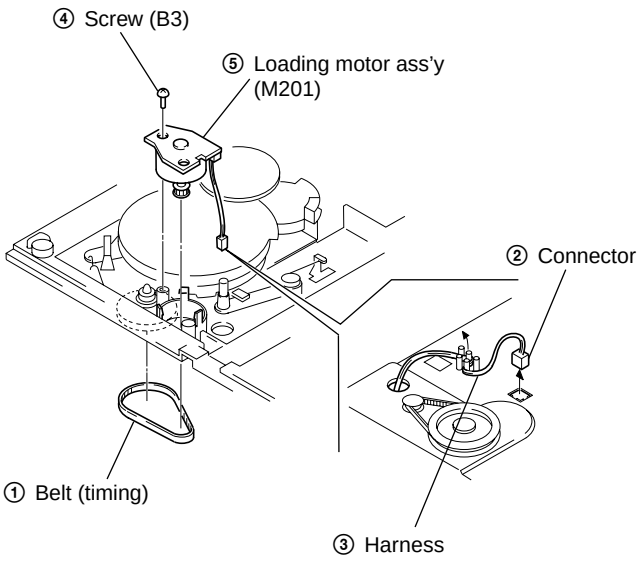
2-8. AI-18 BOARD REMOVAL



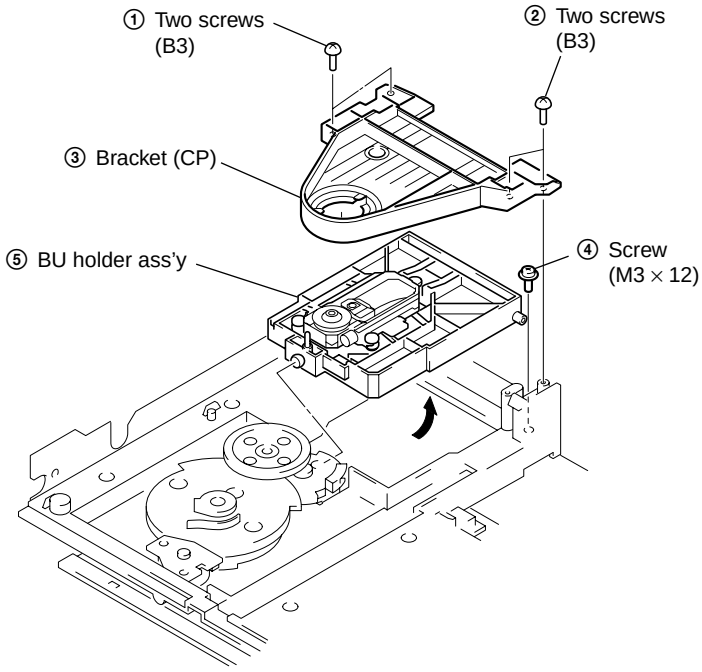
2-9. CHASSIS ASS'Y REMOVAL



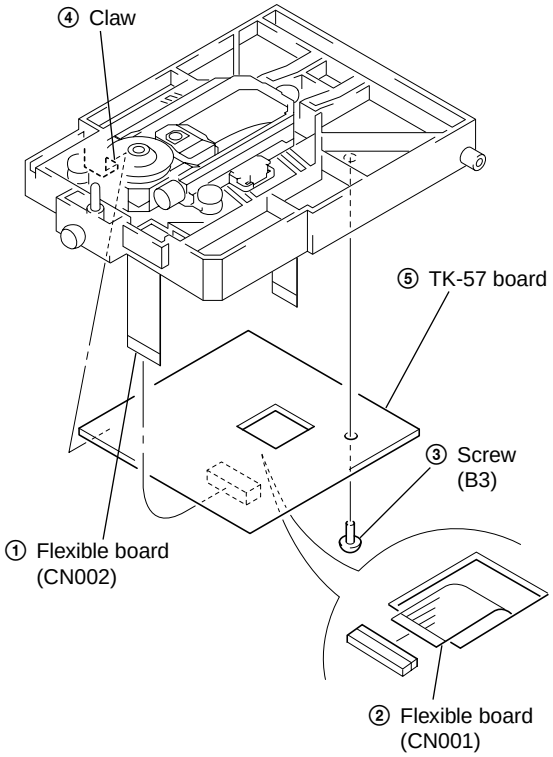
2-10. LOADING MOTOR ASS'Y (M201) REMOVAL



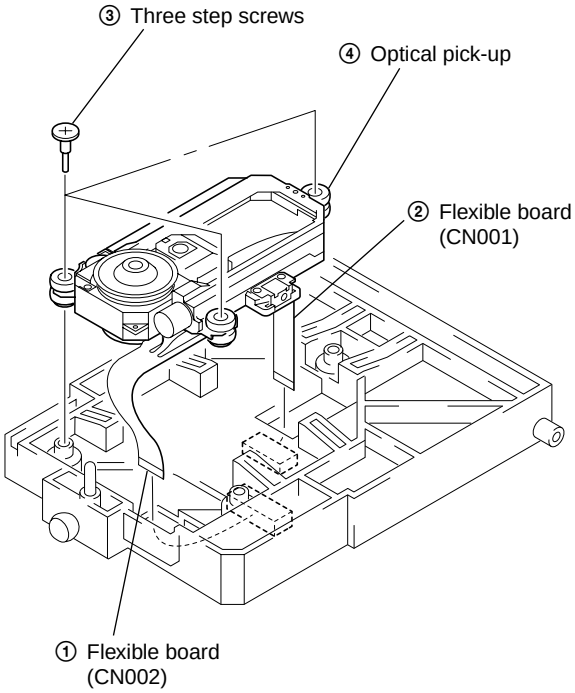
2-11. BU HOLDER ASS'Y REMOVAL



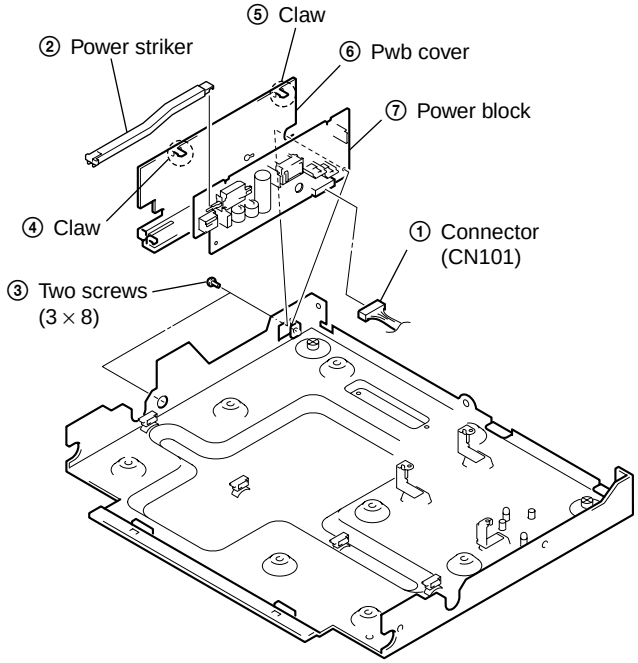
2-12. TK-57 BOARD REMOVAL



2-13. OPTICAL PICK-UP REMOVAL



2-14. POWER BLOCK REMOVAL



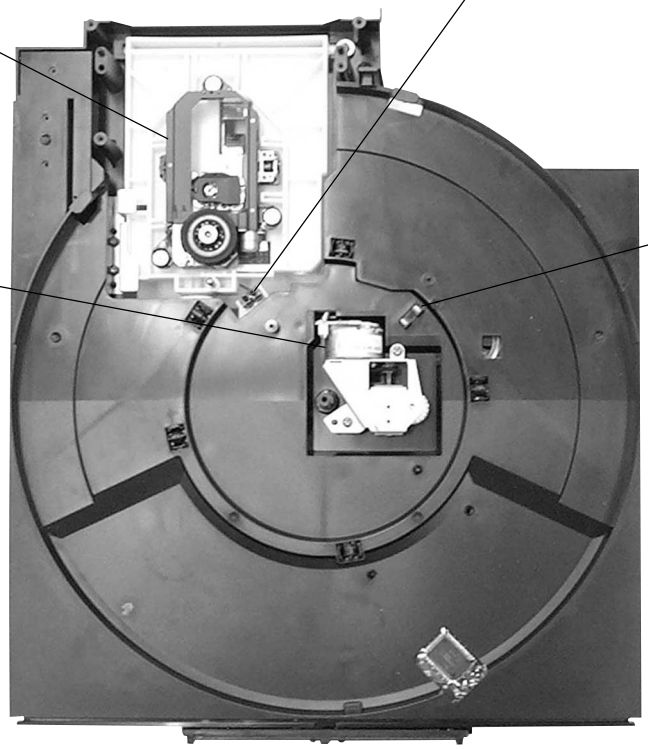
2-15. INTERNAL VIEWS

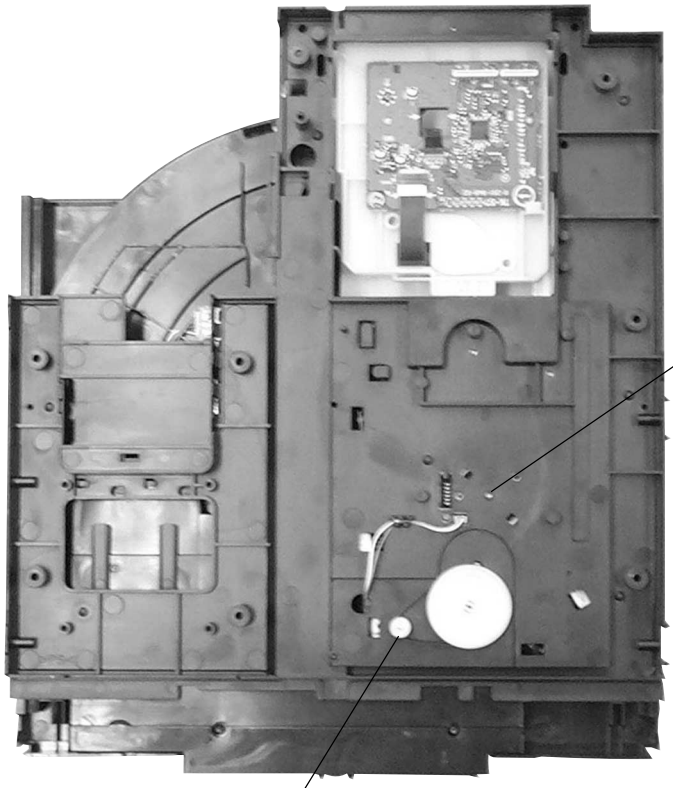
Optical pick-up
(KHM-220AAA/J1RP1)
A-6062-397-A

PH501
Disc presence detection sensor
8-749-924-30

M951
Rotary motor ass'y
(turn table)
A-6062-391-A

PH502
Turn table position
detection sensor
8-749-924-18

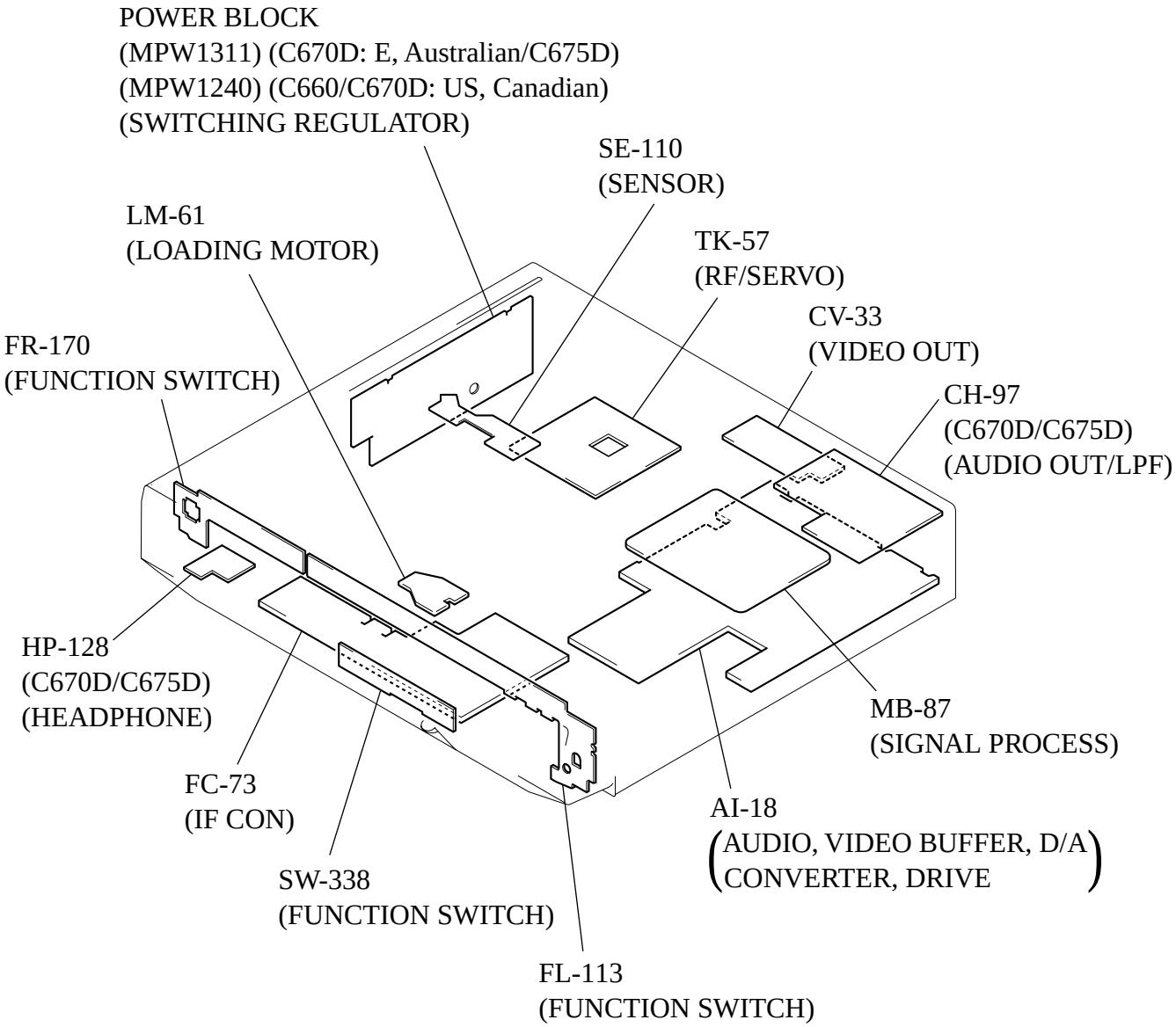




Rotary encoder
(loading)
1-466-996-21

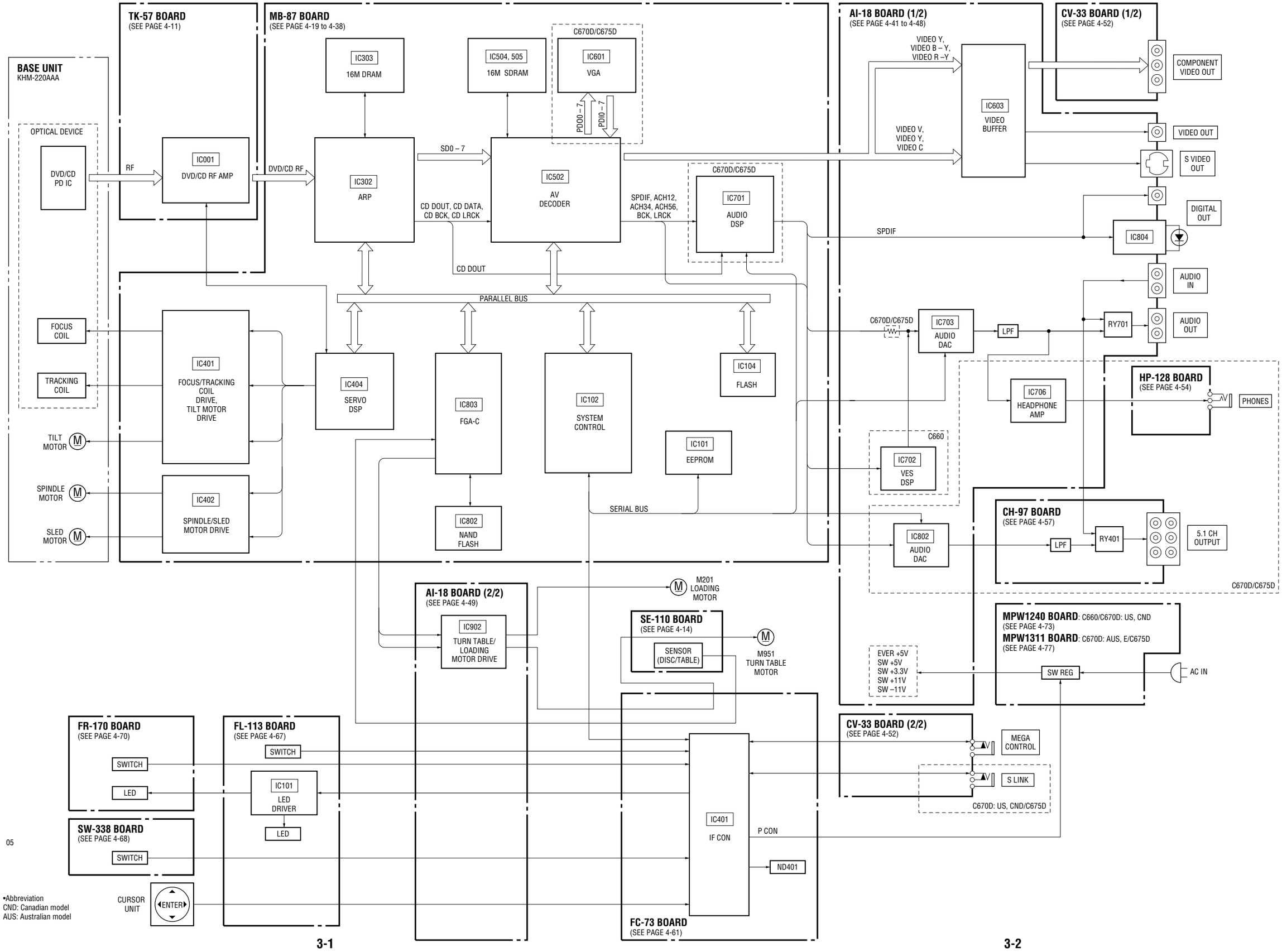
M201
Loading motor ass'y
A-4660-977-A

2-16. CIRCUIT BOARDS LOCATION



SECTION 3
BLOCK DIAGRAMS

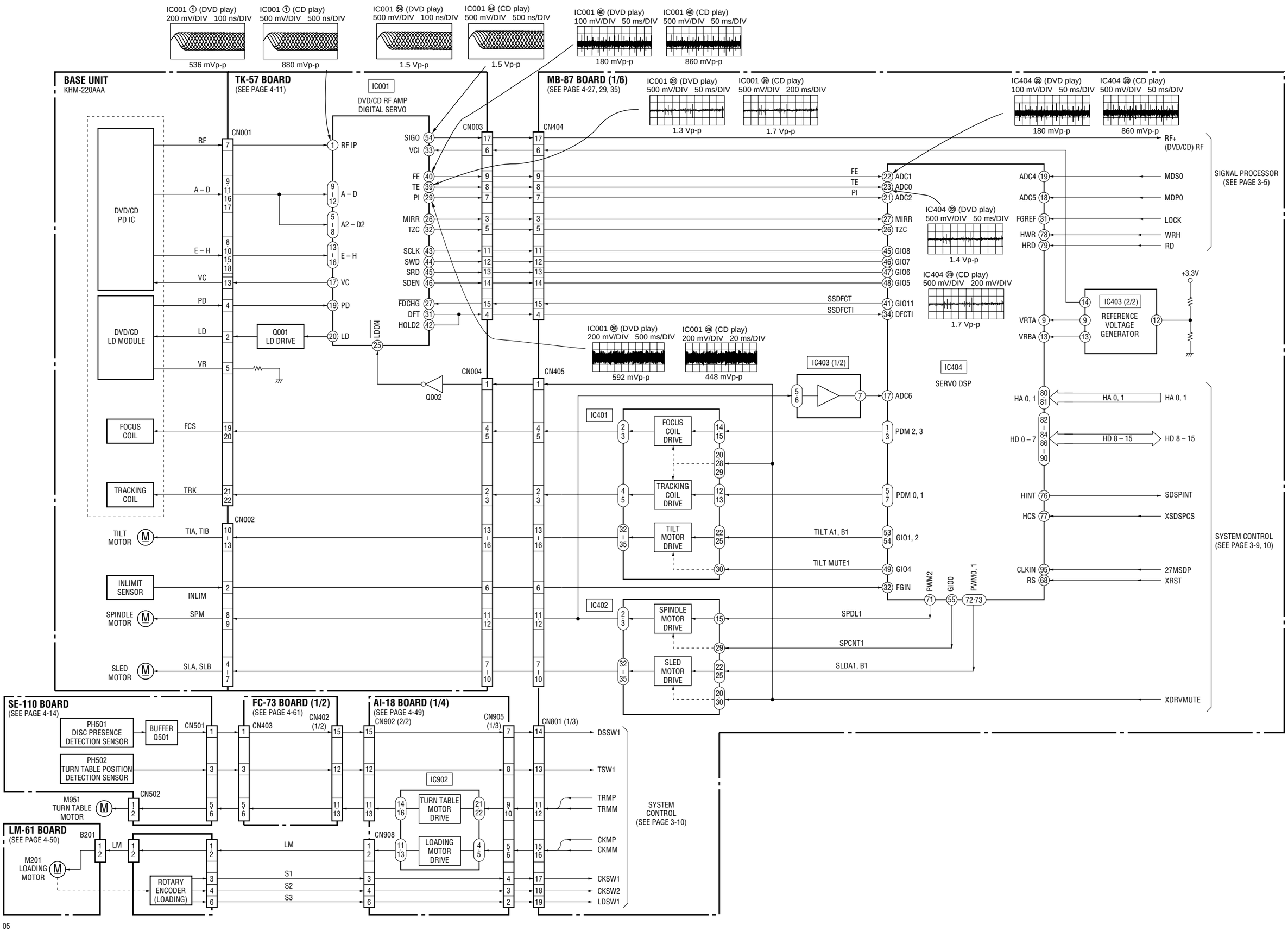
3-1. OVERALL BLOCK DIAGRAM



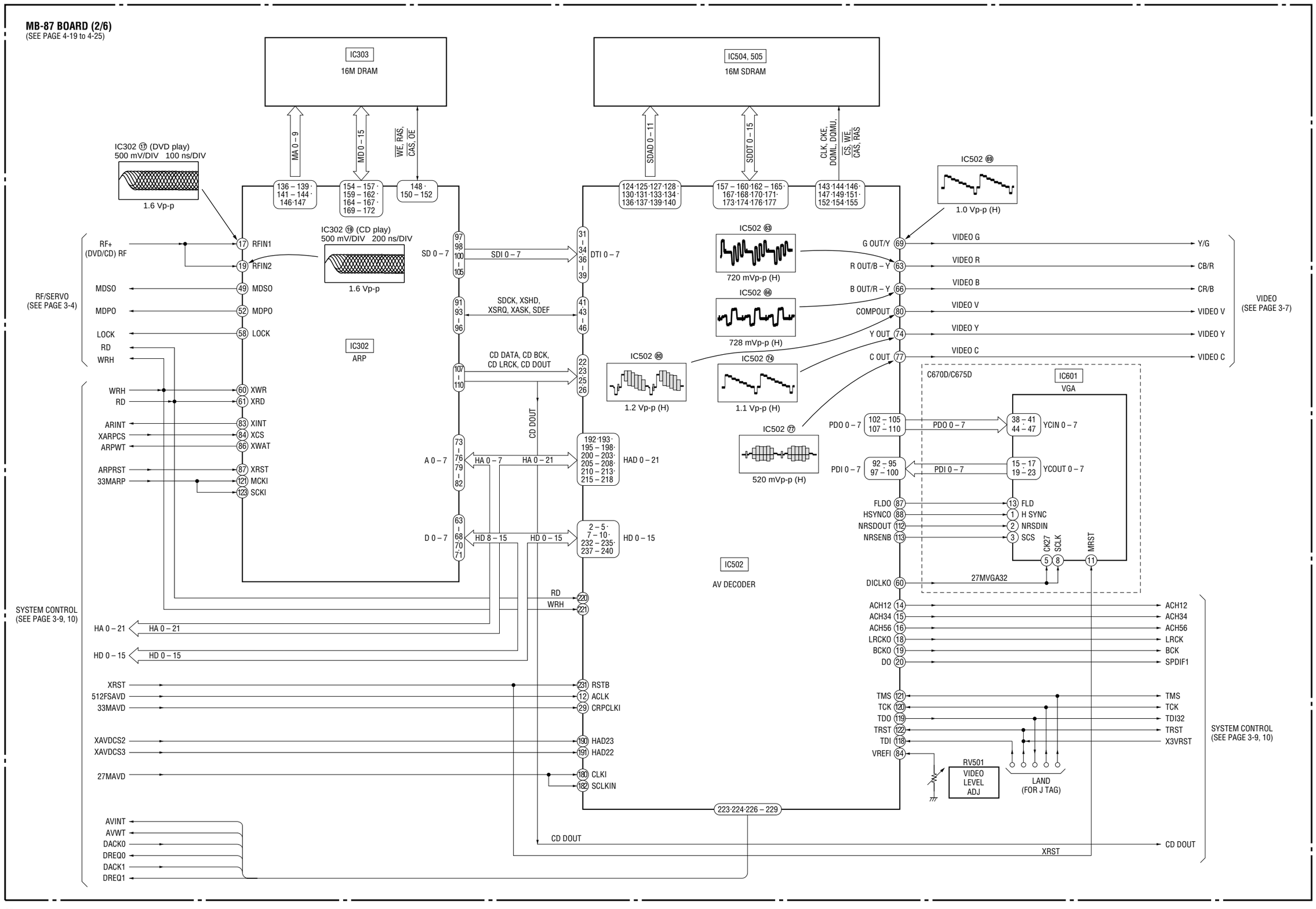
05

•Abbreviation
CND: Canadian model
AUS: Australian model

3-2. RF/SERVO BLOCK DIAGRAM

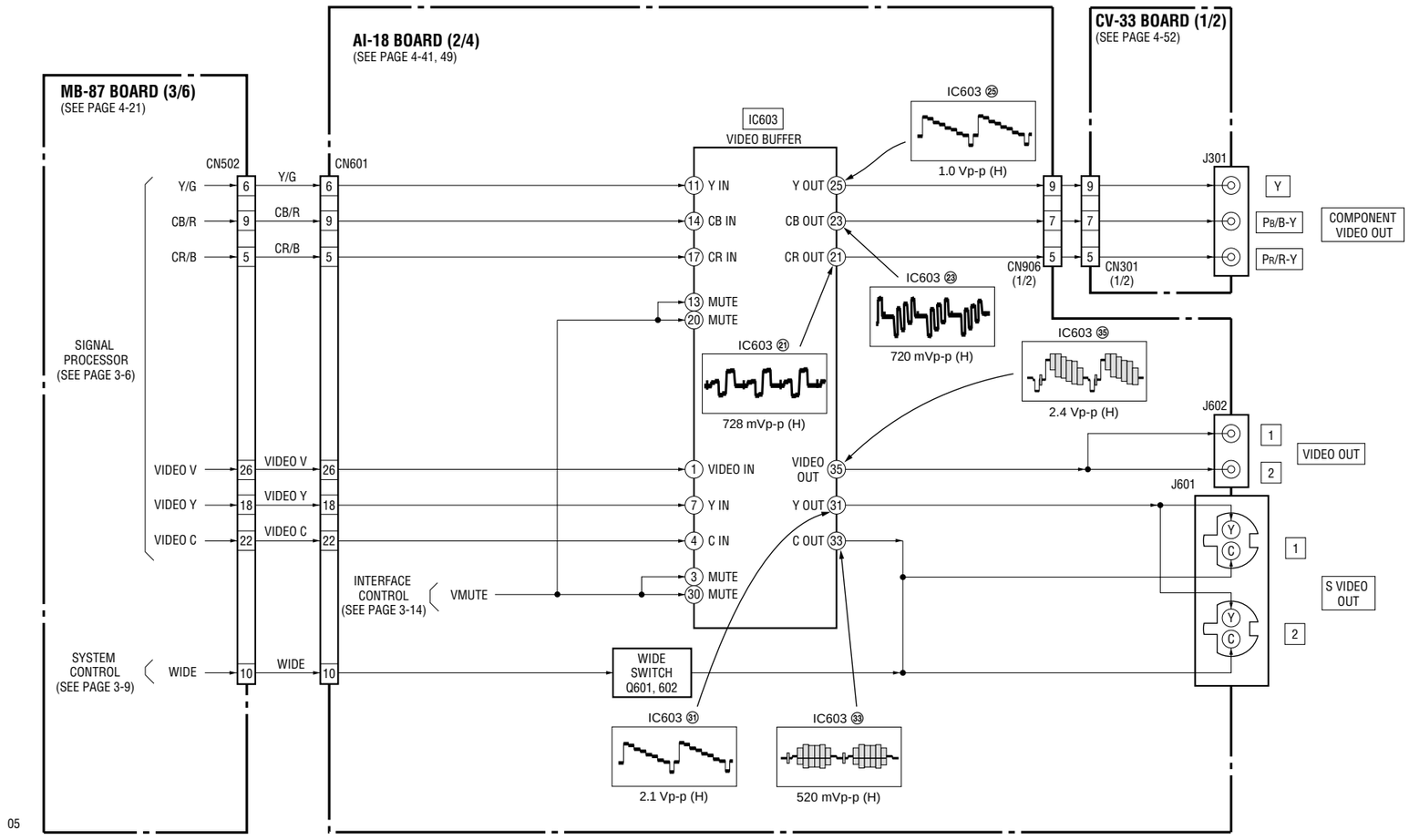


3-3. SIGNAL PROCESS BLOCK DIAGRAM

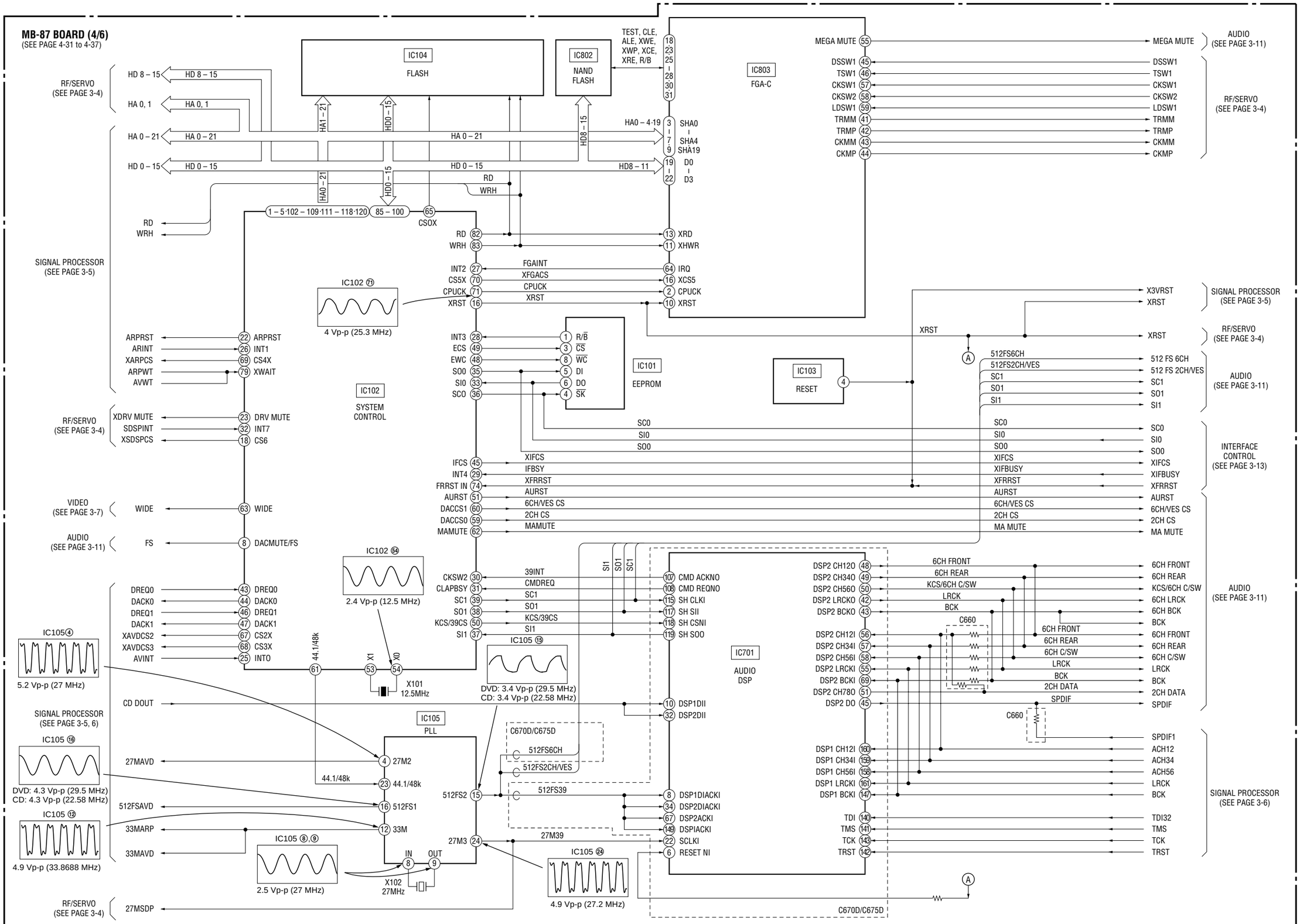


05

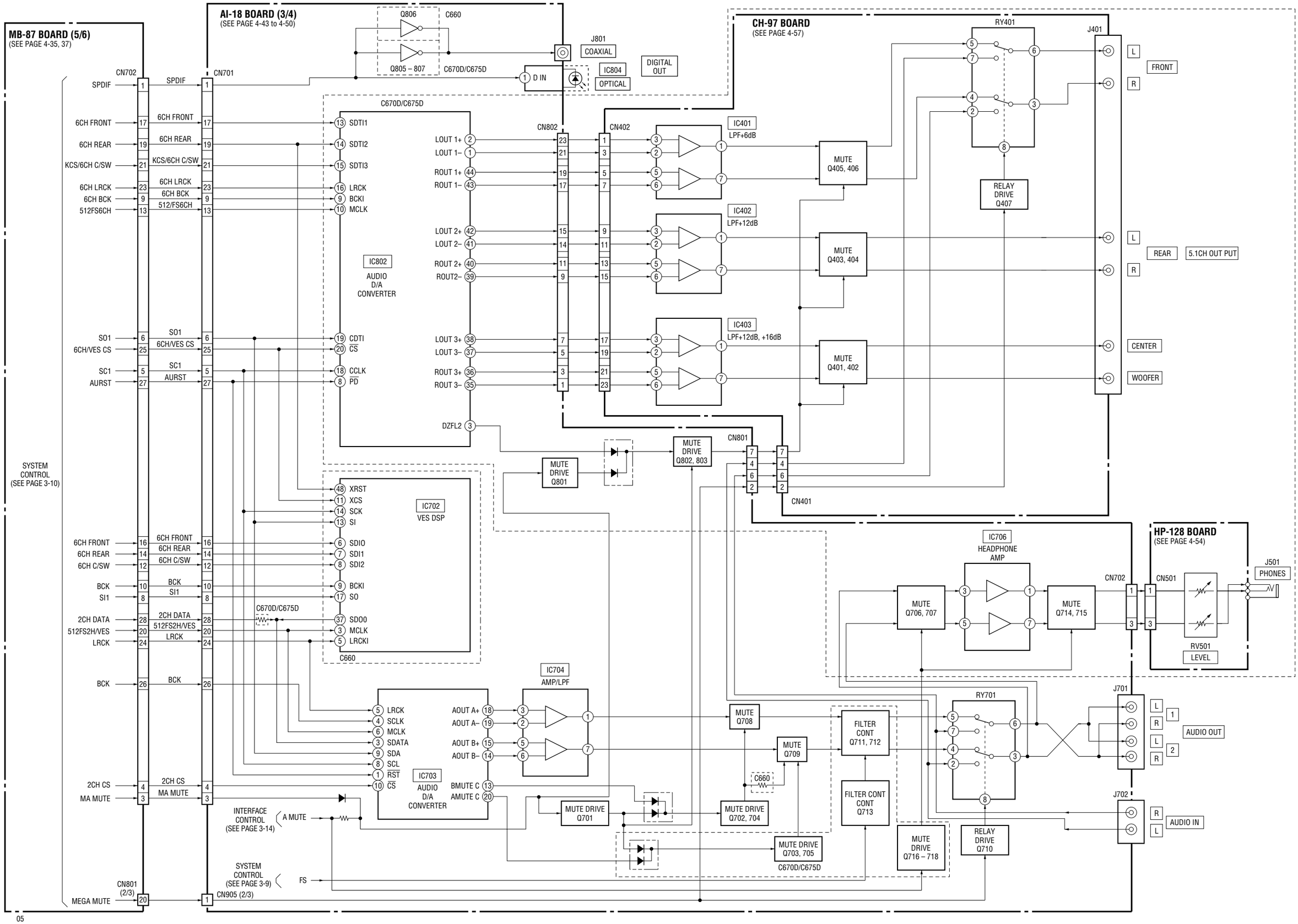
3-4. VIDEO BLOCK DIAGRAM



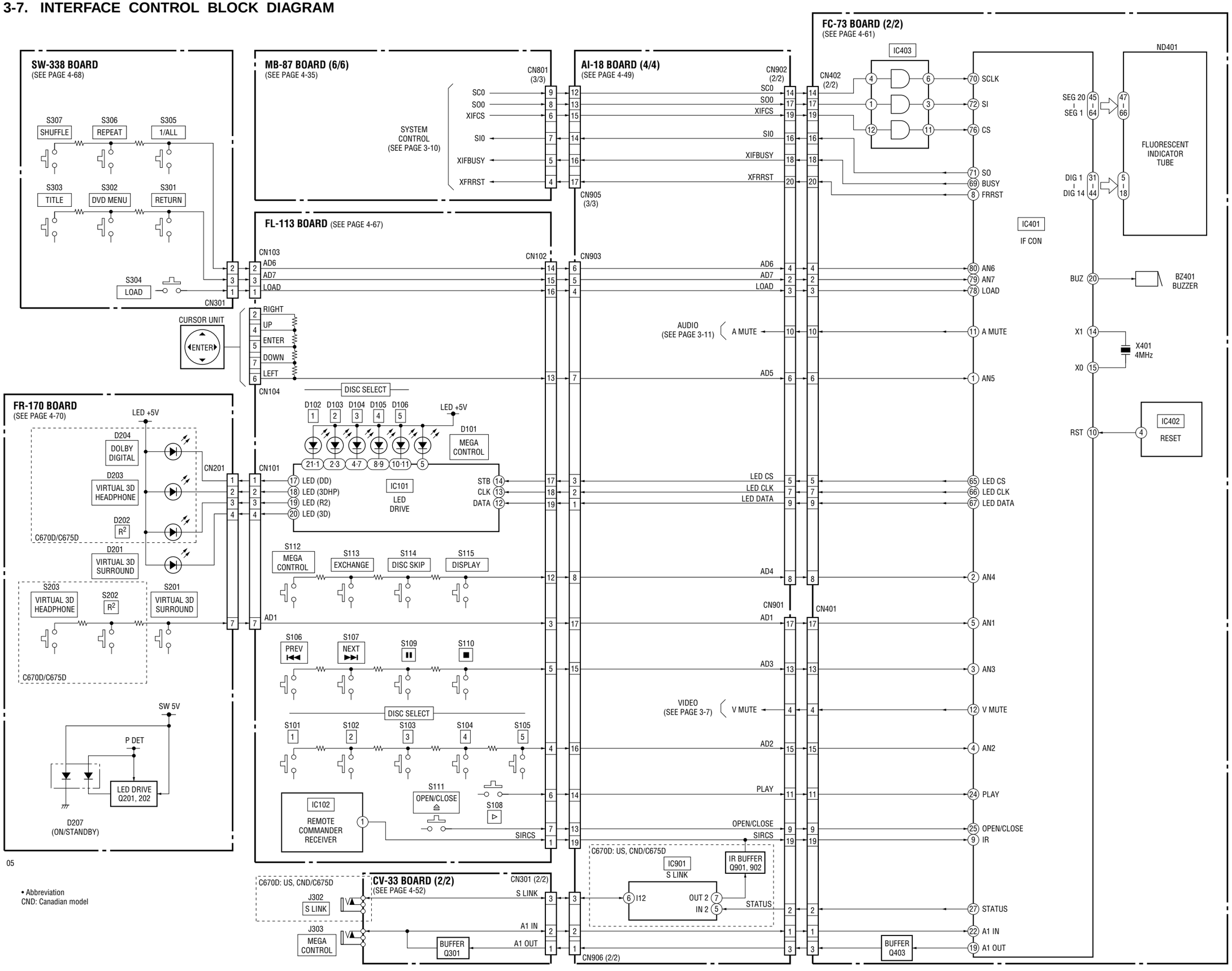
3-5. SYSTEM CONTROL BLOCK DIAGRAM



3-6. AUDIO BLOCK DIAGRAM



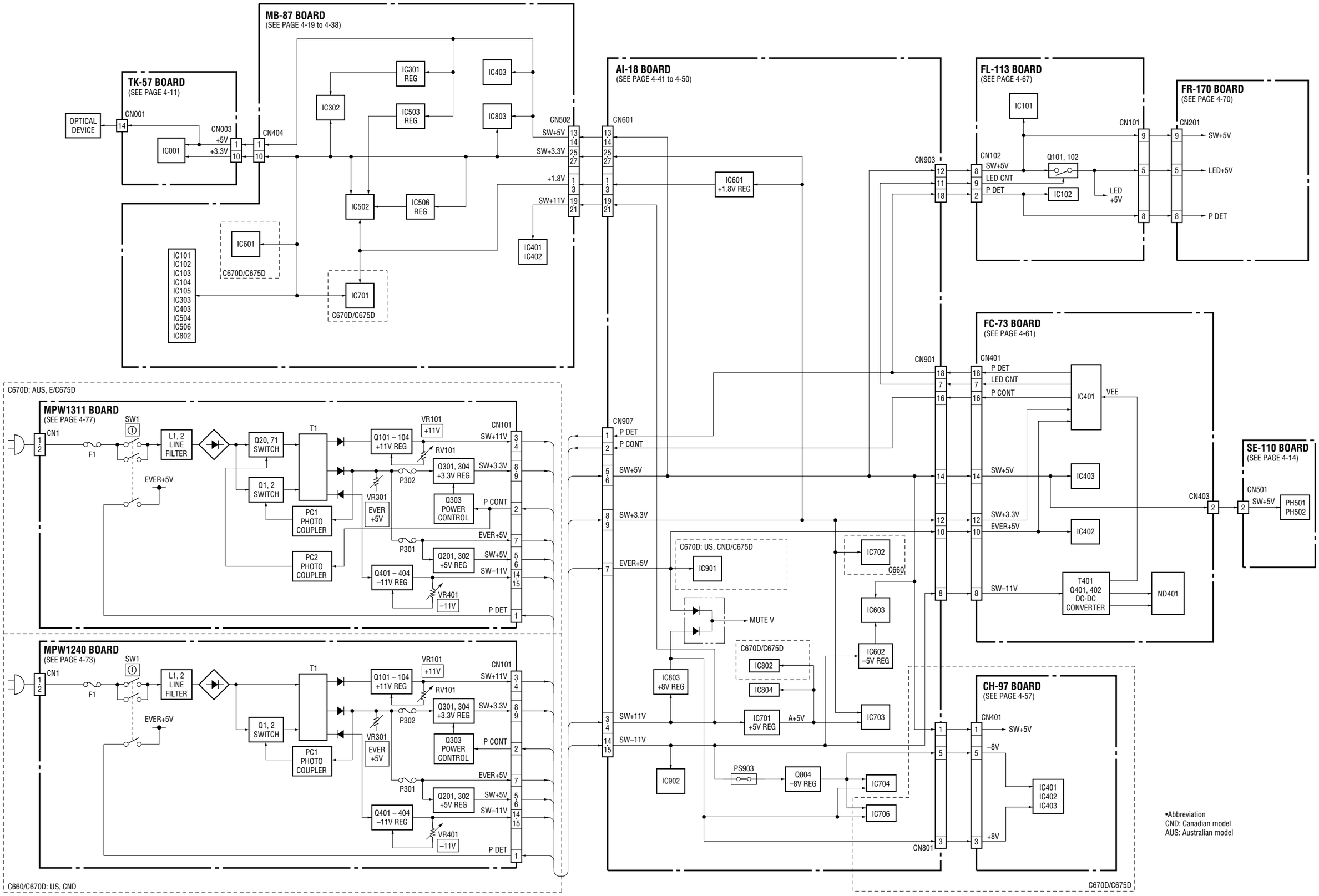
3-7. INTERFACE CONTROL BLOCK DIAGRAM



05

• Abbreviation
CND: Canadian model

3-8. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- o——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

For schematic Diagram:

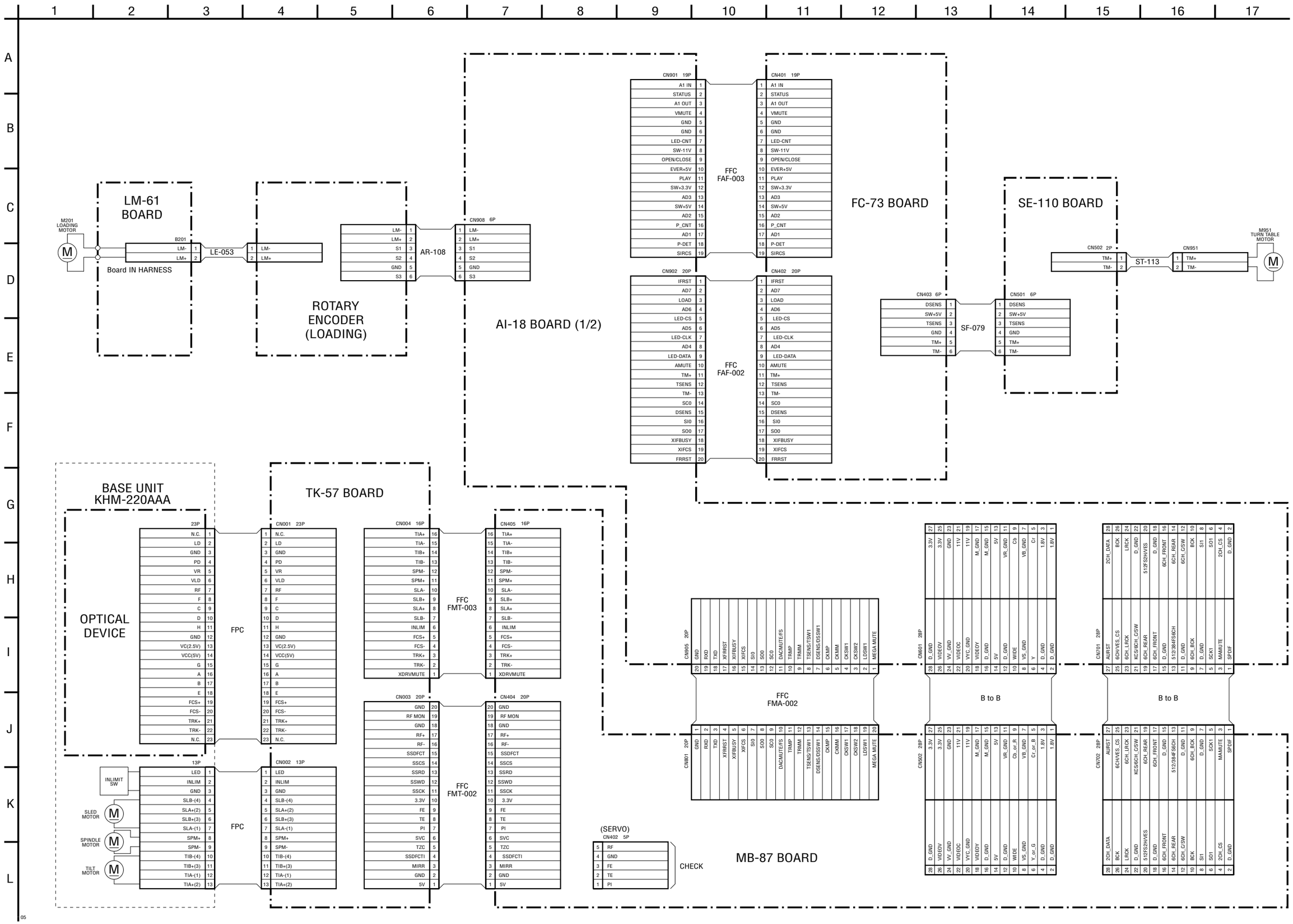
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line.
- B − : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

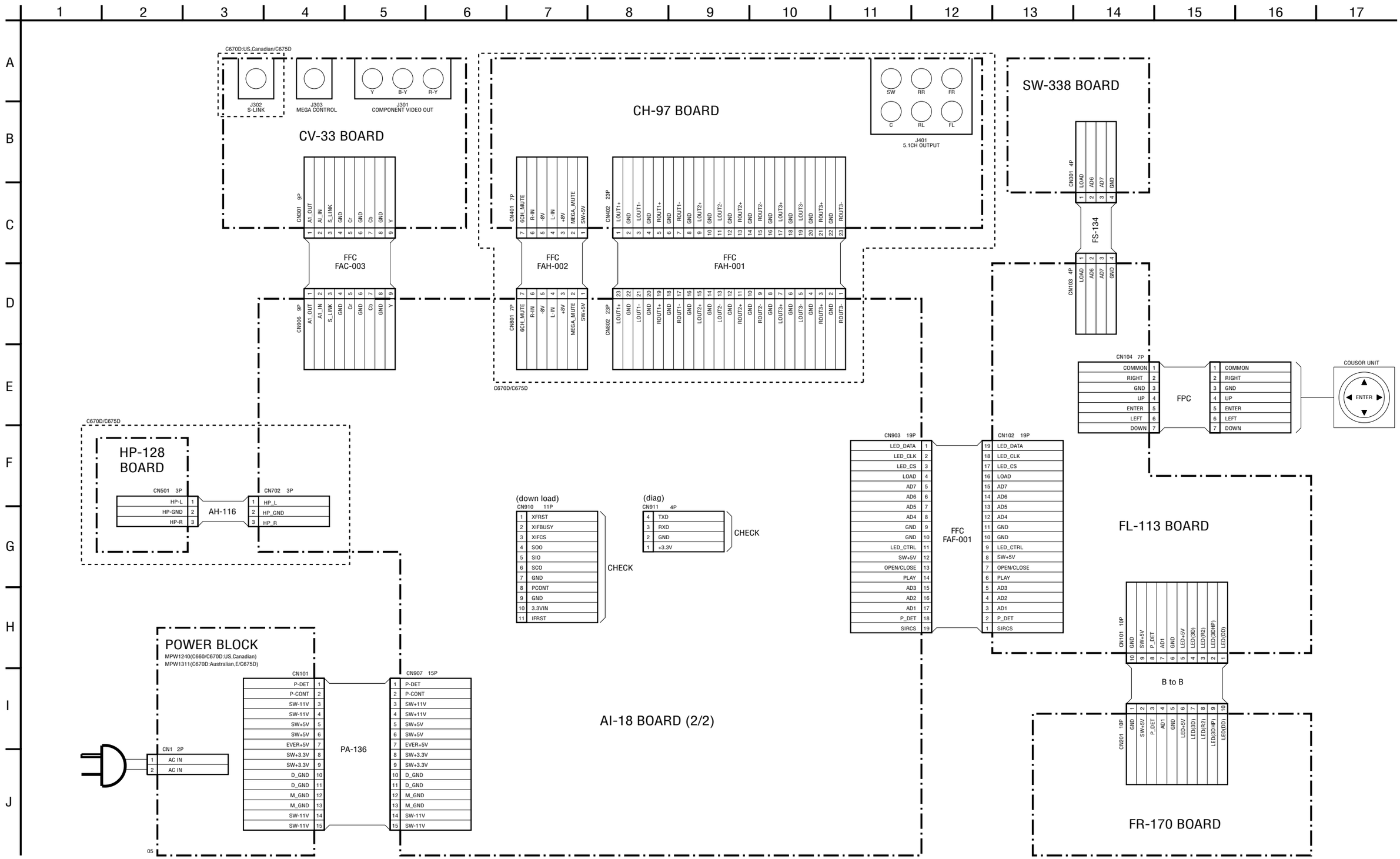
4-1. FRAME SCHEMATIC DIAGRAM

FRAME (1) SCHEMATIC DIAGRAM

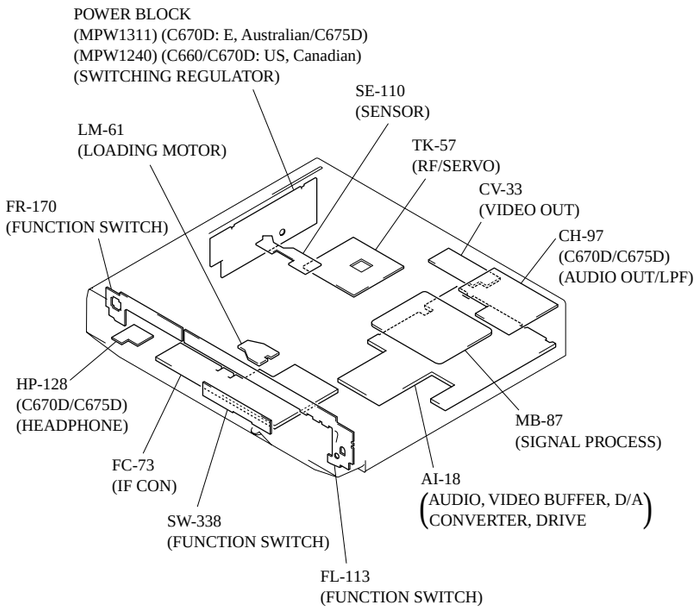


FRAME (1/2)

FRAME (2) SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS



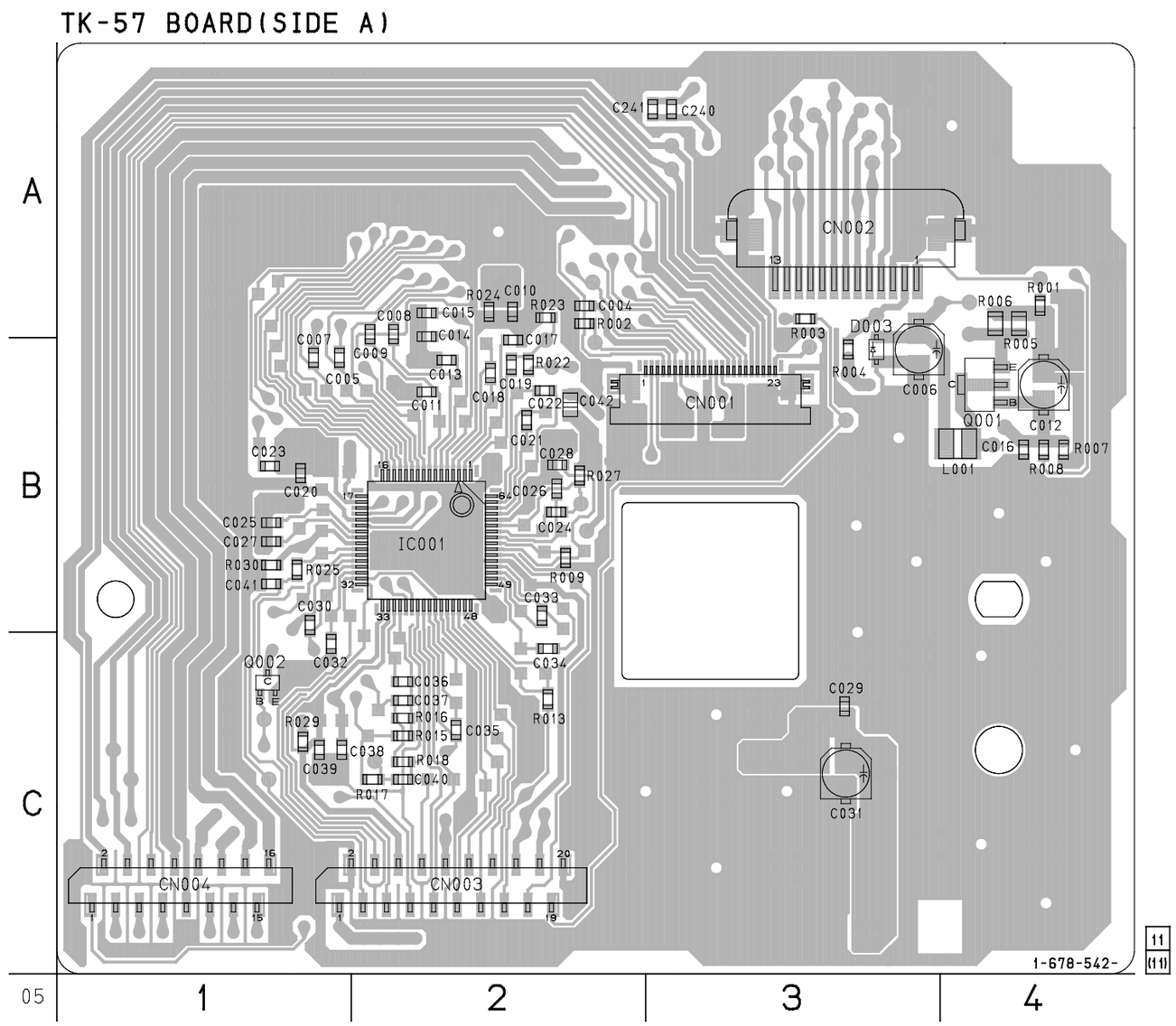
TK-57 (RF/SERVO) PRINTED WIRING BOARD

– Ref. No.: TK-57 board; 3,000 series –

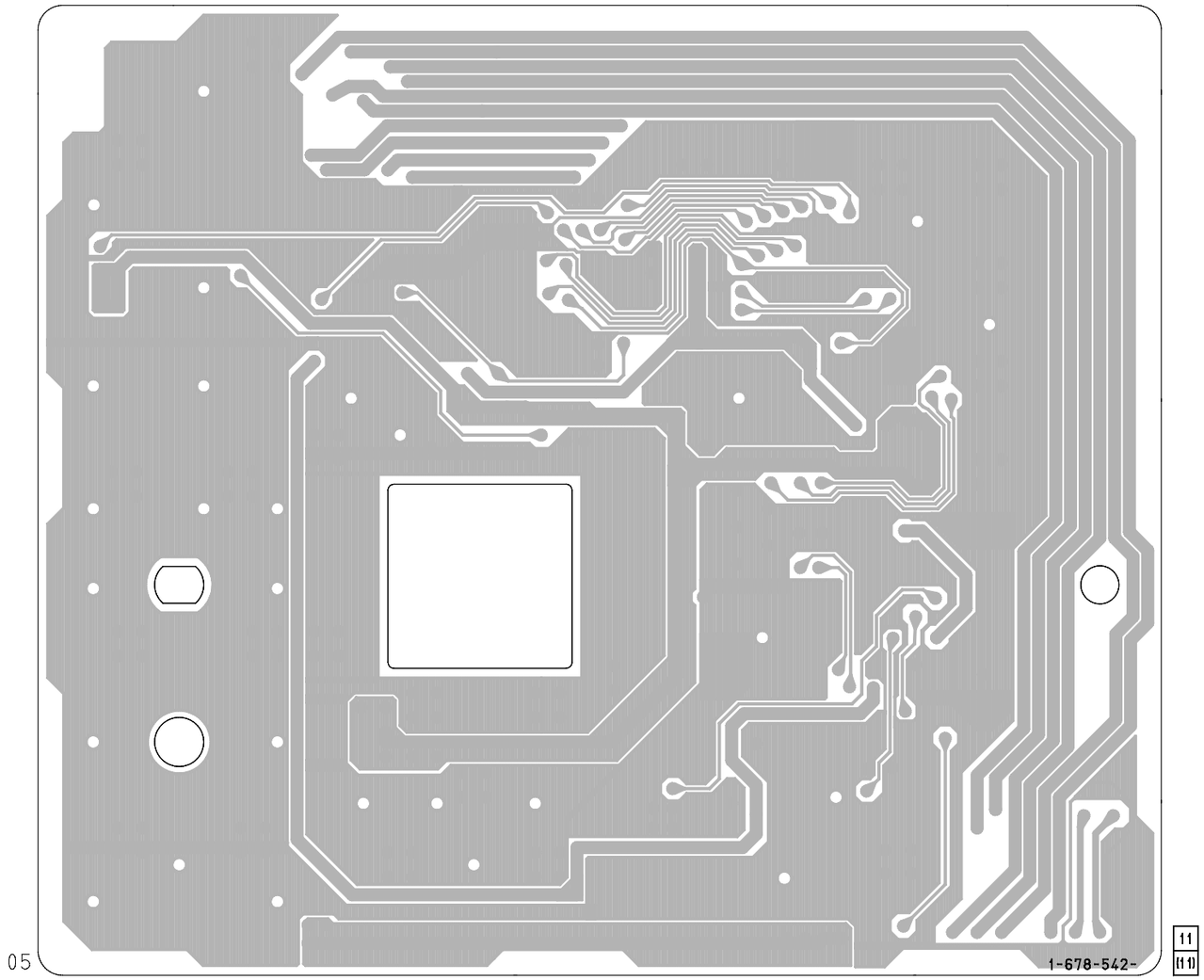
There are few cases that the part isn't mounted in this model is printed on this diagram.

TK-57 BOARD (SIDE A)

CN001	B-3
CN002	A-3
CN003	C-2
CN004	C-1
D003	B-3
IC001	B-2
Q001	B-4
Q002	C-1

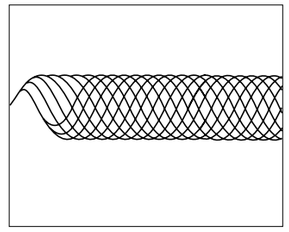


TK-57 BOARD(SIDE B)



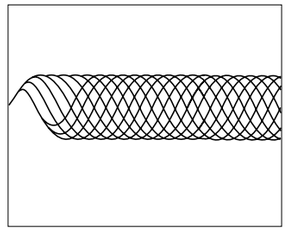
• **Waveforms**

❶ IC001 ① (DVD play)
200 mV/DIV 100 ns/DIV



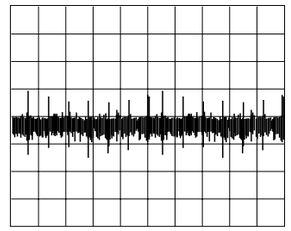
536 mVp-p

❷ IC001 ① (CD play)
500 mV/DIV 500 ns/DIV



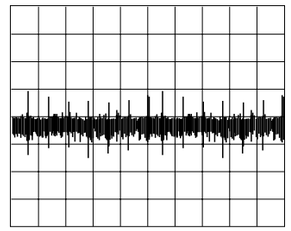
880 mVp-p

❸ IC001 ㉙ (DVD play)
200 mV/DIV 500 ms/DIV



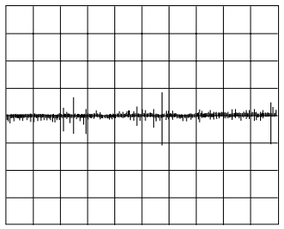
592 mVp-p

❹ IC001 ㉙ (CD play)
200 mV/DIV 20 ms/DIV



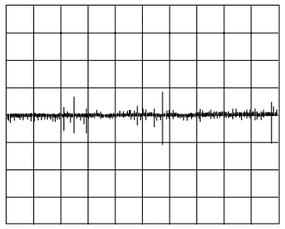
448 mVp-p

❺ IC001 ㊴ (DVD play)
500 mV/DIV 50 ms/DIV



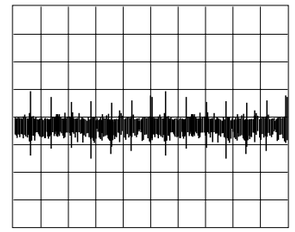
1.3 Vp-p

❻ IC001 ㊴ (CD play)
500 mV/DIV 200 ms/DIV



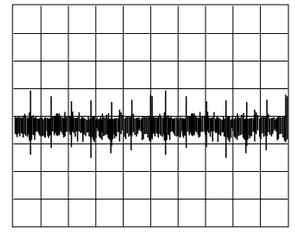
1.7 Vp-p

❼ IC001 ㊵ (DVD play)
100 mV/DIV 50 ms/DIV



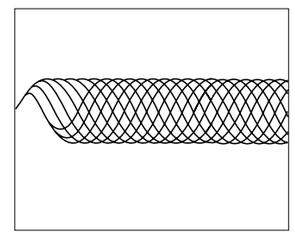
180 mVp-p

❽ IC001 ㊵ (CD play)
500 mV/DIV 50 ms/DIV



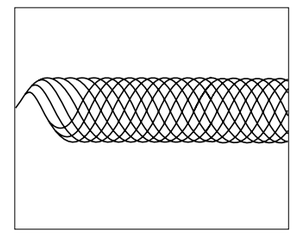
860 mVp-p

❾ IC001 ㊹ (DVD play)
500 mV/DIV 100 ns/DIV



1.5 Vp-p

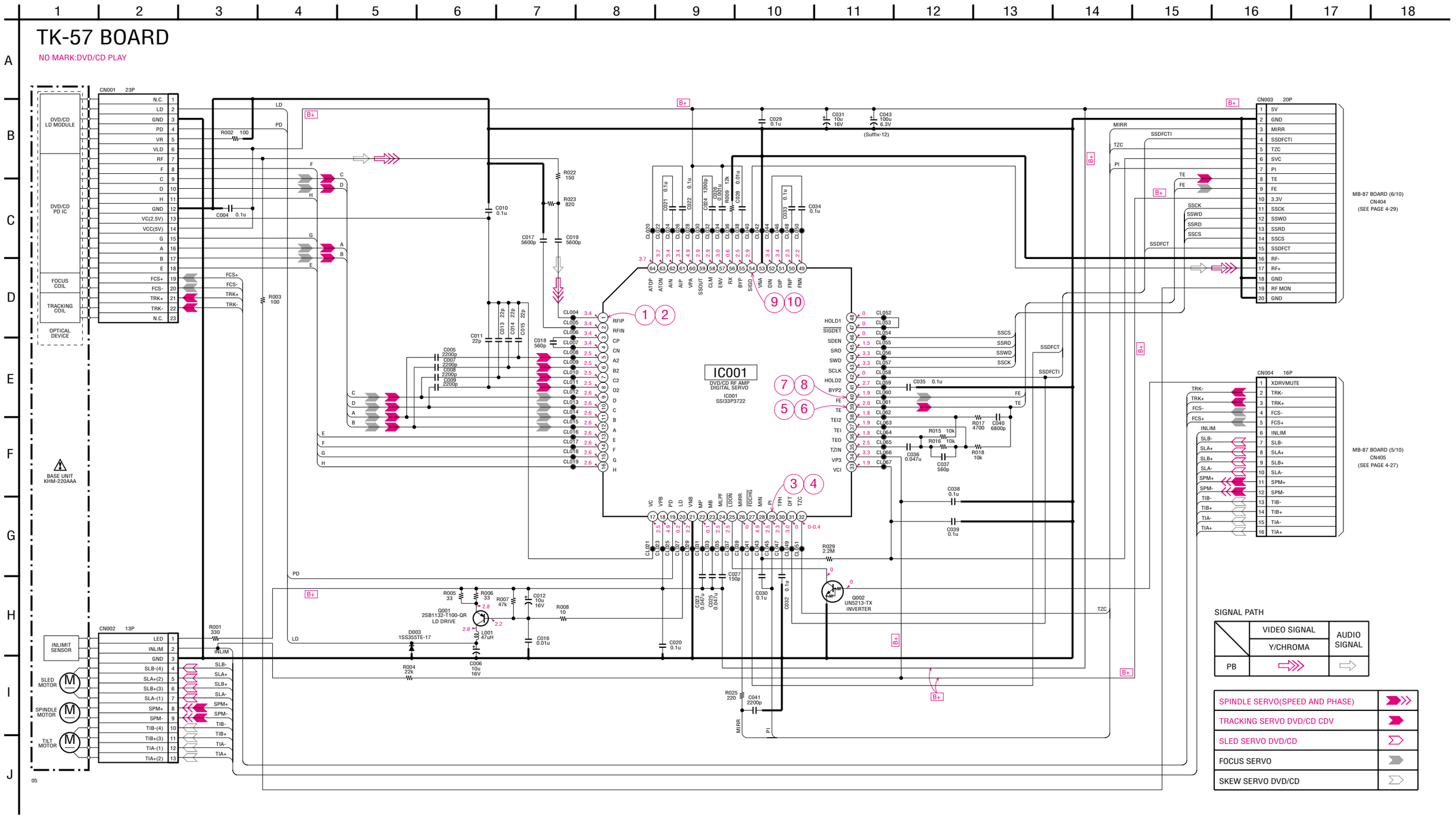
❿ IC001 ㊹ (CD play)
500 mV/DIV 500 ns/DIV



1.5 Vp-p

TK-57 (RF/SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board and page 4-10 for waveforms.

– Ref. No.: TK-57 board; 3,000 series –

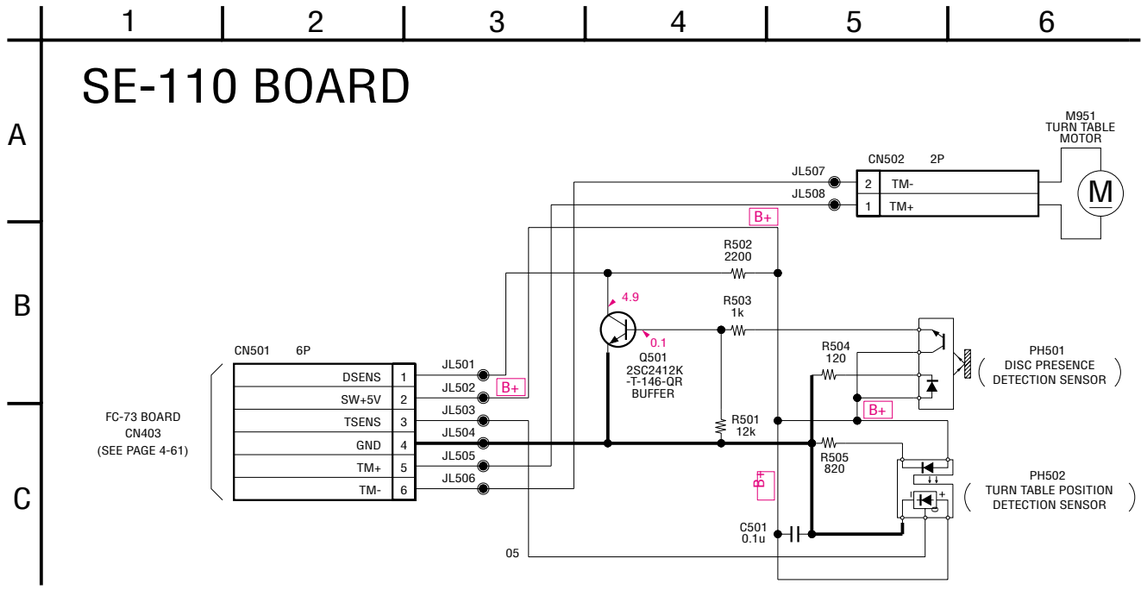


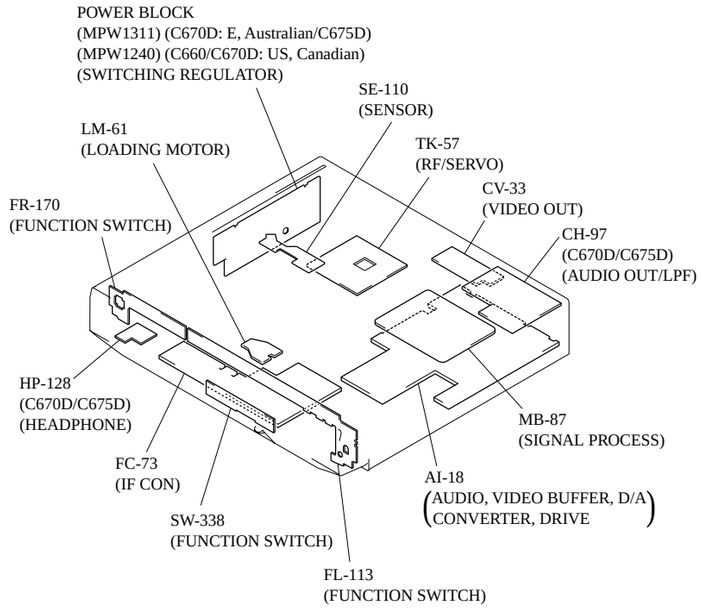
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SE-110 (SENSOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: SE-110 board; 3,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.





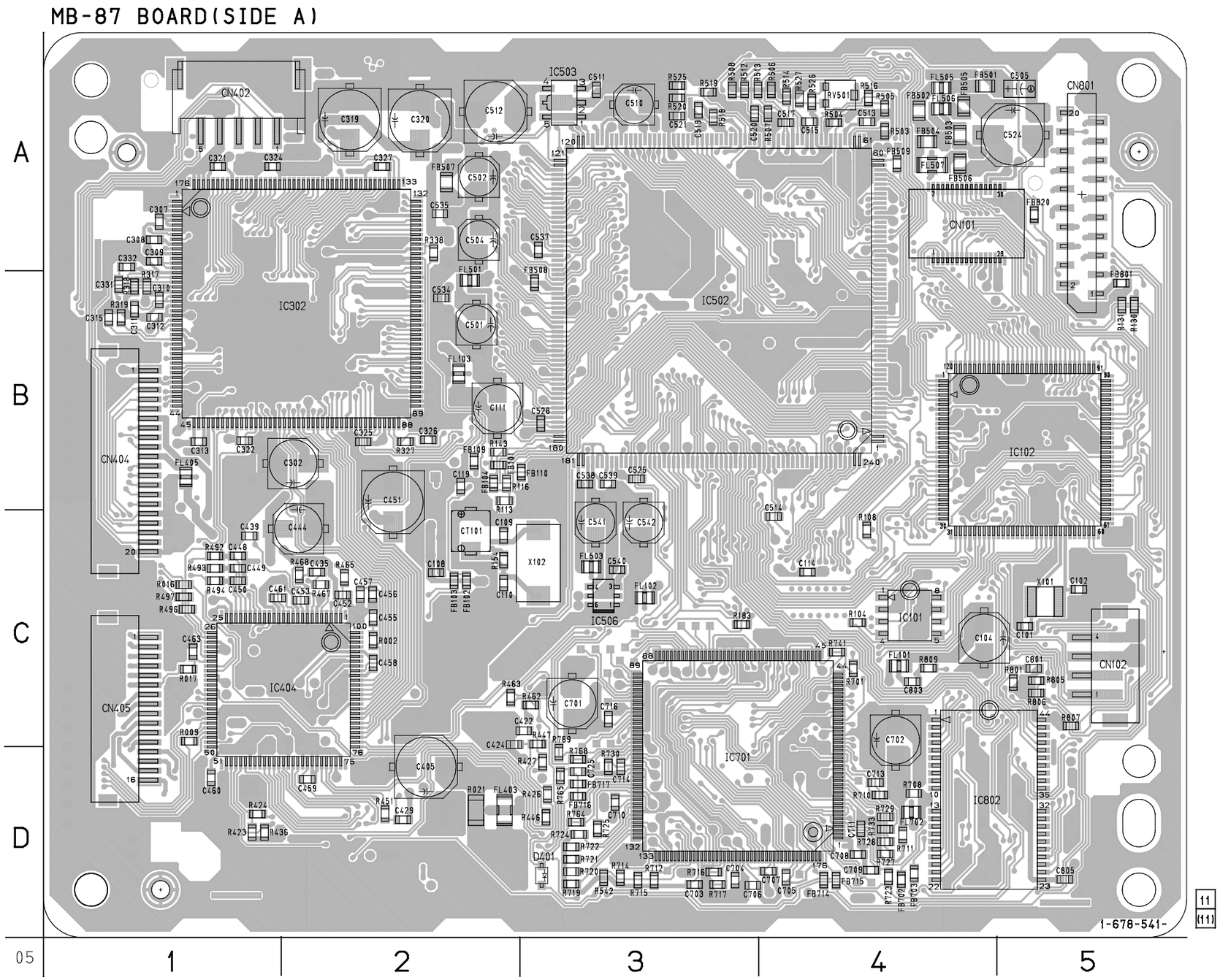
MB-87 (SIGNAL PROCESS) PRINTED WIRING BOARD

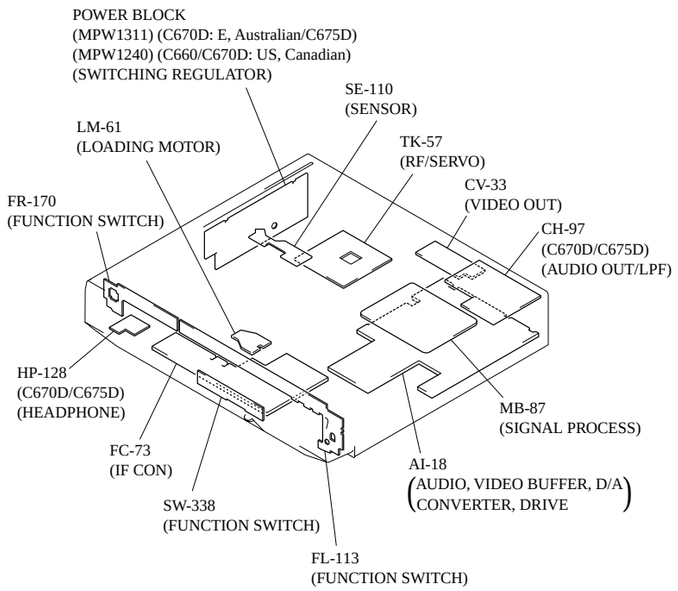
– Ref. No.: MB-87 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

MB-87 BOARD (SIDE A)

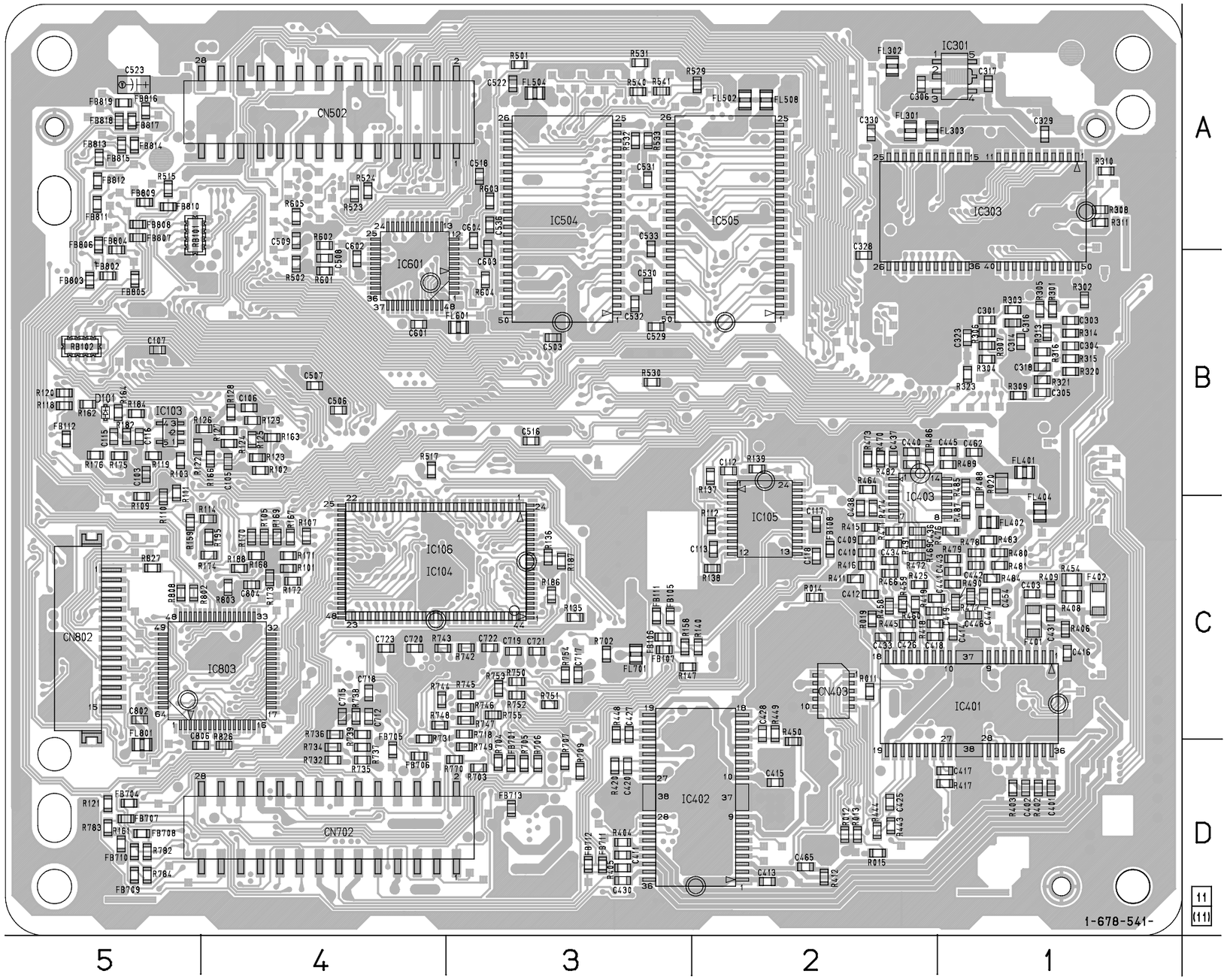
CN402	A-1
CN404	B-1
CN405	C-1
CN801	A-5
IC101	C-4
IC102	B-5
IC302	B-2
IC404	C-2
IC502	B-3
IC503	A-3
IC506	C-3
IC701	D-3
IC802	D-4





SIGNAL PROCESS
MB-87

MB-87 BOARD(SIDE B)



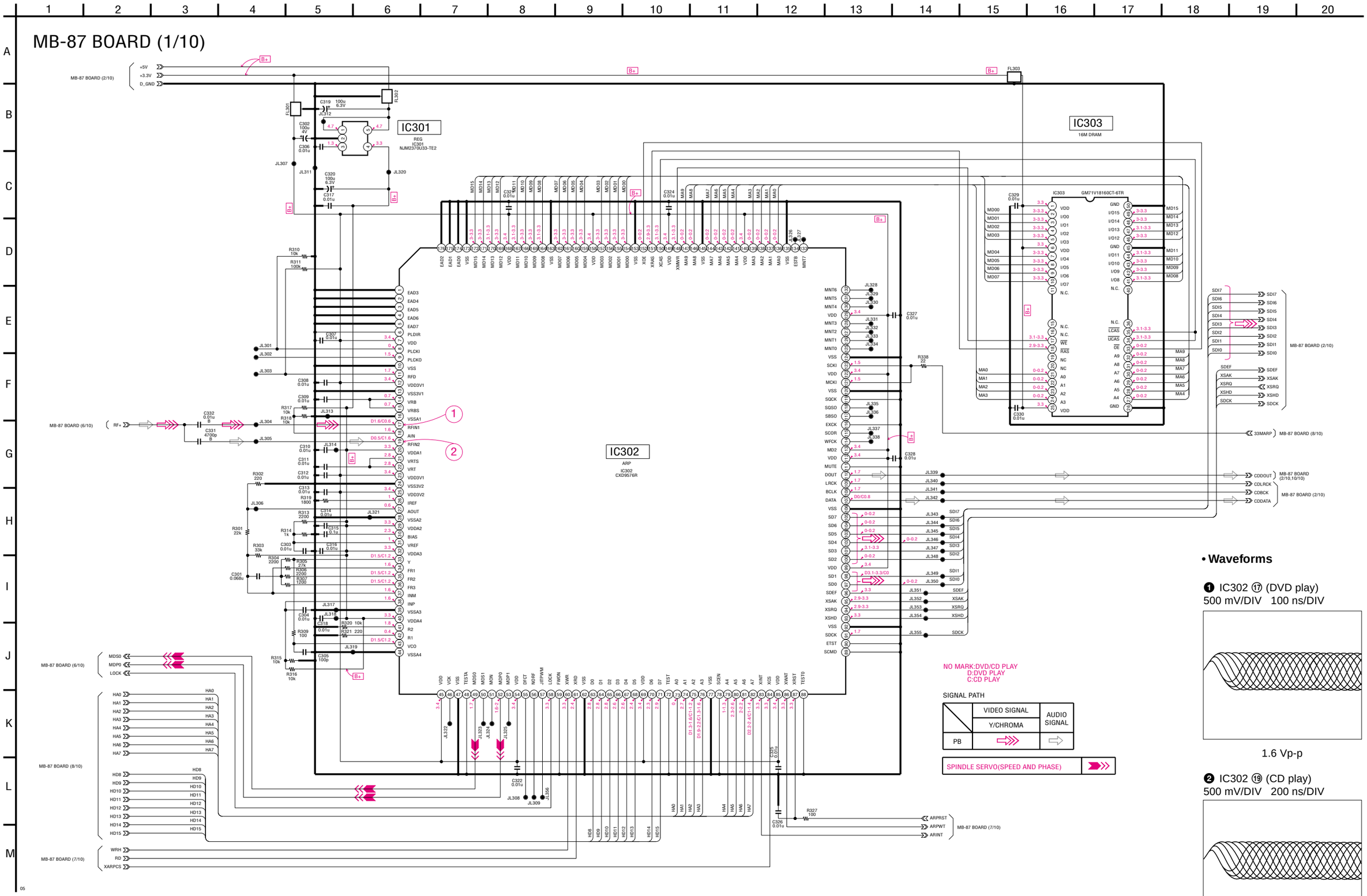
MB-87 BOARD (SIDE B)

CN502	A-4
CN702	D-4
D101	B-5
IC103	B-5
IC104	C-4
IC105	C-2
IC301	A-1
IC303	A-1
IC401	C-1
IC402	D-2
IC403	B-2
IC504	A-3
IC505	A-2
IC601	B-4
IC803	C-4

MB-87 (ARP) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-87 board; 1,000 series –

MB-87 BOARD (1/10)



• **Waveforms**

❶ IC302 ⑰ (DVD play)
500 mV/DIV 100 ns/DIV

1.6 Vp-p

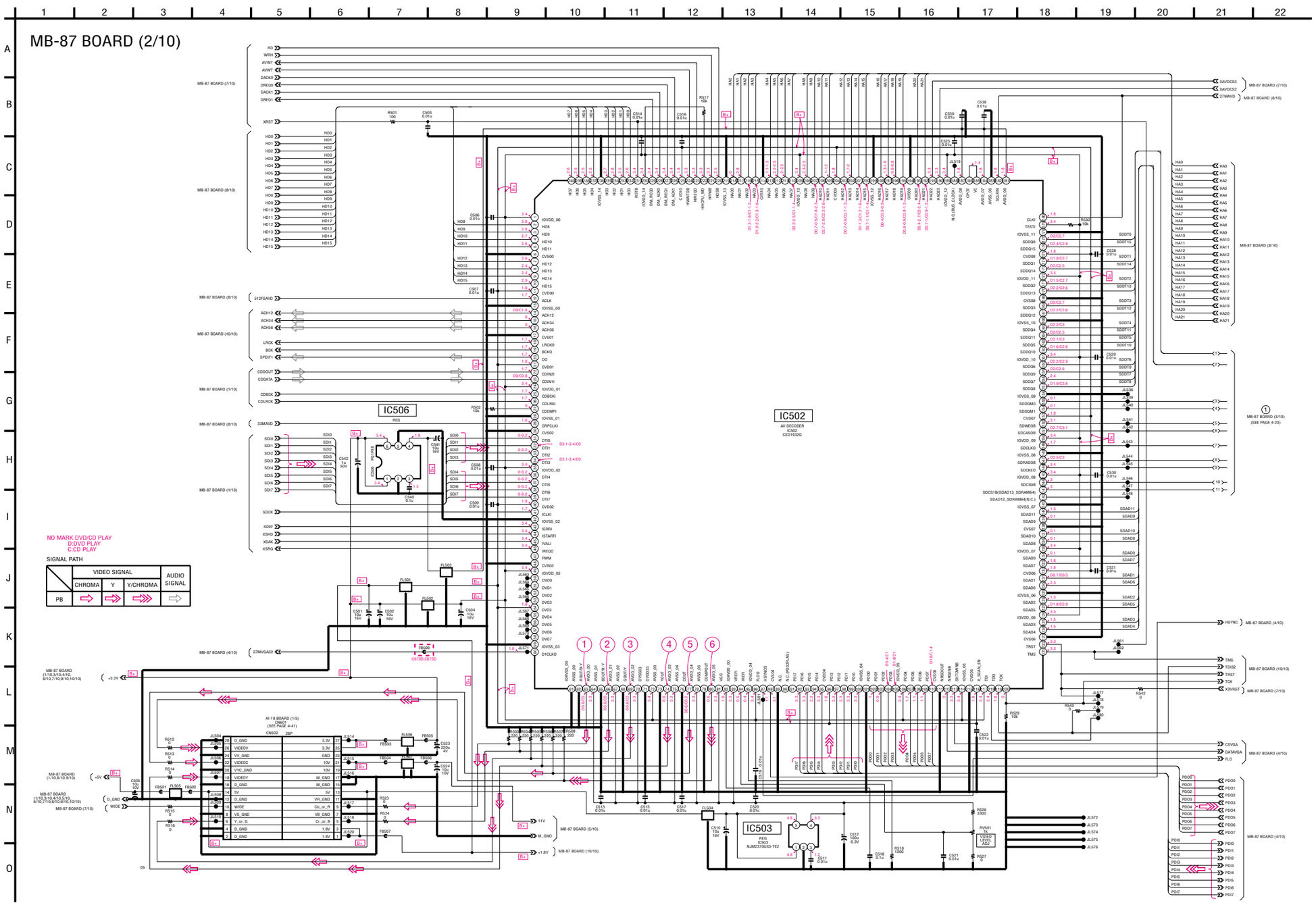
❷ IC302 ⑲ (CD play)
500 mV/DIV 200 ns/DIV

1.6 Vp-p

ARP
MB-87 (1/10)

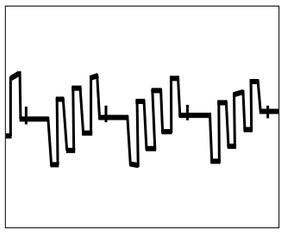
MB-87 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-87 board; 1,000 series –



• **Waveforms**

❶ IC502 ⑥③

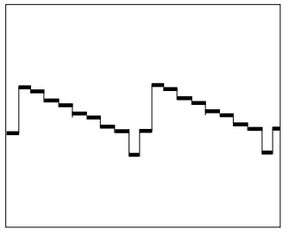


720 mVp-p (H)

❷ IC502 ⑥⑥

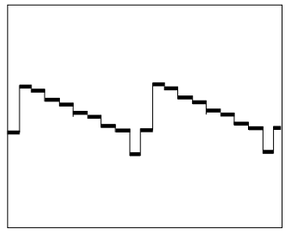
728 mVp-p (H)

❸ IC502 ⑥⑨



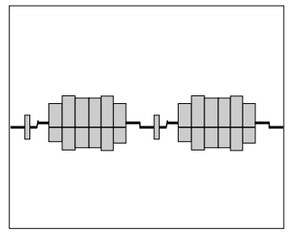
1.0 Vp-p (H)

❹ IC502 ⑦④



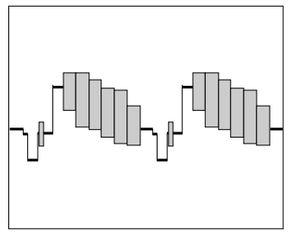
1.1 Vp-p (H)

❺ IC502 ⑦⑦



520 mVp-p (H)

❻ IC502 ⑧⓪



1.2 Vp-p (H)

AV DECODER
MB-87 (2/10)

MB-87 (SDRAM) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –

MB-87 BOARD (3/10)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY

IC504
16M SDRAM

IC504 MT48LC1M16A1TG-7S

C532 0.01u
C533 0.01u
C534 0.01u
C535 0.01u
C536 0.01u
C537 0.01u

3.3	1	VCC	VSS	50		
SDDT0	D1.9/C2.7	2	DQ0	DQ15	49	D2.4/C2.8	SDDT15
SDDT1	D1.9/C2.7	3	DQ1	DQ14	48	D2.1/C2.5	SDDT14
		4	VSSQ	VSSQ	47		
SDDT2	D1.5/C2.7	5	DQ2	DQ13	46	D2.1/C2.6	SDDT13
SDDT3	D2/C2.7	6	DQ3	DQ12	45	D2.1/C2.6	SDDT12
	3.3	7	VCCQ	VCCQ	44	3.3	
SDDT4	D2.3/C3	8	DQ4	DQ11	43	D2.1/C2.5	SDDT11
SDDT5	D2.2/C3	9	DQ5	DQ10	42	D1.5/C2.6	SDDT10
		10	VSSQ	VSSQ	41		
SDDT6	D2.1/C2.9	11	DQ6	DQ9	40	D2.1/C2.6	SDDT9
SDDT7	2.3	12	DQ7	DQ8	39	D1.9/C2.6	SDDT8
	3.3	13	VCCQ	VCCQ	38	3.3	
	0.1	14	DQML	N.C.	37		
	3	15	WE	DQMU	36	0.1	
	D2.7/C3.1	16	CAS	CLK	35	1.6	
	D2.5/C3	17	RAS	CKE	34	3.3	
	3	18	CS	N.C.	33		
SDAD11	1.5	19	A11(BA)	A9	32	0.1	SDAD9
SDAD10	0.1	20	A10/AP	A8	31	0.1	SDAD8
SDAD0	0.1	21	A0	A7	30	1.8	SDAD7
SDAD1	D0.7/C0.3	22	A1	A6	29	D2.3/C2.9	SDAD6
SDAD2	1.2	23	A2	A5	28	1.7	SDAD5
SDAD3	1.5	24	A3	A4	27	1.4	SDAD4
	3.3	25	VCC	VSS	26		

IC505
16M SDRAM

IC505 MT48LC1M16A1TG-7S

3.3	1	VCC	VSS	50		
SDDT0	D1.9/C2.7	2	DQ0	DQ15	49	D2.4/C2.8	SDDT15
SDDT1	D1.9/C2.7	3	DQ1	DQ14	48	D2.1/C2.5	SDDT14
		4	VSSQ	VSSQ	47		
SDDT2	D1.5/C2.7	5	DQ2	DQ13	46	D2.1/C2.6	SDDT13
SDDT3	D2/C2.7	6	DQ3	DQ12	45	D2.1/C2.6	SDDT12
	3.3	7	VCCQ	VCCQ	44	3.3	
SDDT4	D2.3/C3	8	DQ4	DQ11	43	D2.1/C2.5	SDDT11
SDDT5	D2.2/C3	9	DQ5	DQ10	42	D1.5/C2.6	SDDT10
		10	VSSQ	VSSQ	41		
SDDT6	D2.1/C2.9	11	DQ6	DQ9	40	D2.1/C2.6	SDDT9
SDDT7	2.3	12	DQ7	DQ8	39	D1.9/C2.6	SDDT8
	3.3	13	VCCQ	VCCQ	38	3.3	
	0.1	14	DQML	N.C.	37		
	3	15	WE	DQMU	36	0.1	
	D2.7/C3.1	16	CAS	CLK	35	1.6	
	D2.5/C3	17	RAS	CKE	34	3.3	
	3	18	CS	N.C.	33		
SDAD11	1.5	19	A11(BA)	A9	32	0.1	SDAD9
SDAD10	0.1	20	A10/AP	A8	31	0.1	SDAD8
SDAD0	0.1	21	A0	A7	30	1.8	SDAD7
SDAD1	D0.7/C0.3	22	A1	A6	29	D2.3/C2.9	SDAD6
SDAD2	1.2	23	A2	A5	28	1.7	SDAD5
SDAD3	1.5	24	A3	A4	27	1.4	SDAD4
	3.3	25	VCC	VSS	26		

B+

FB508 10 C

FL508

D_GND
+3.3V
MB-87 BOARD (2/10)

1 MB-87 BOARD (2/10) (SEE PAGE 4-22)

2 3 4 5 6 7 8 9 10 11

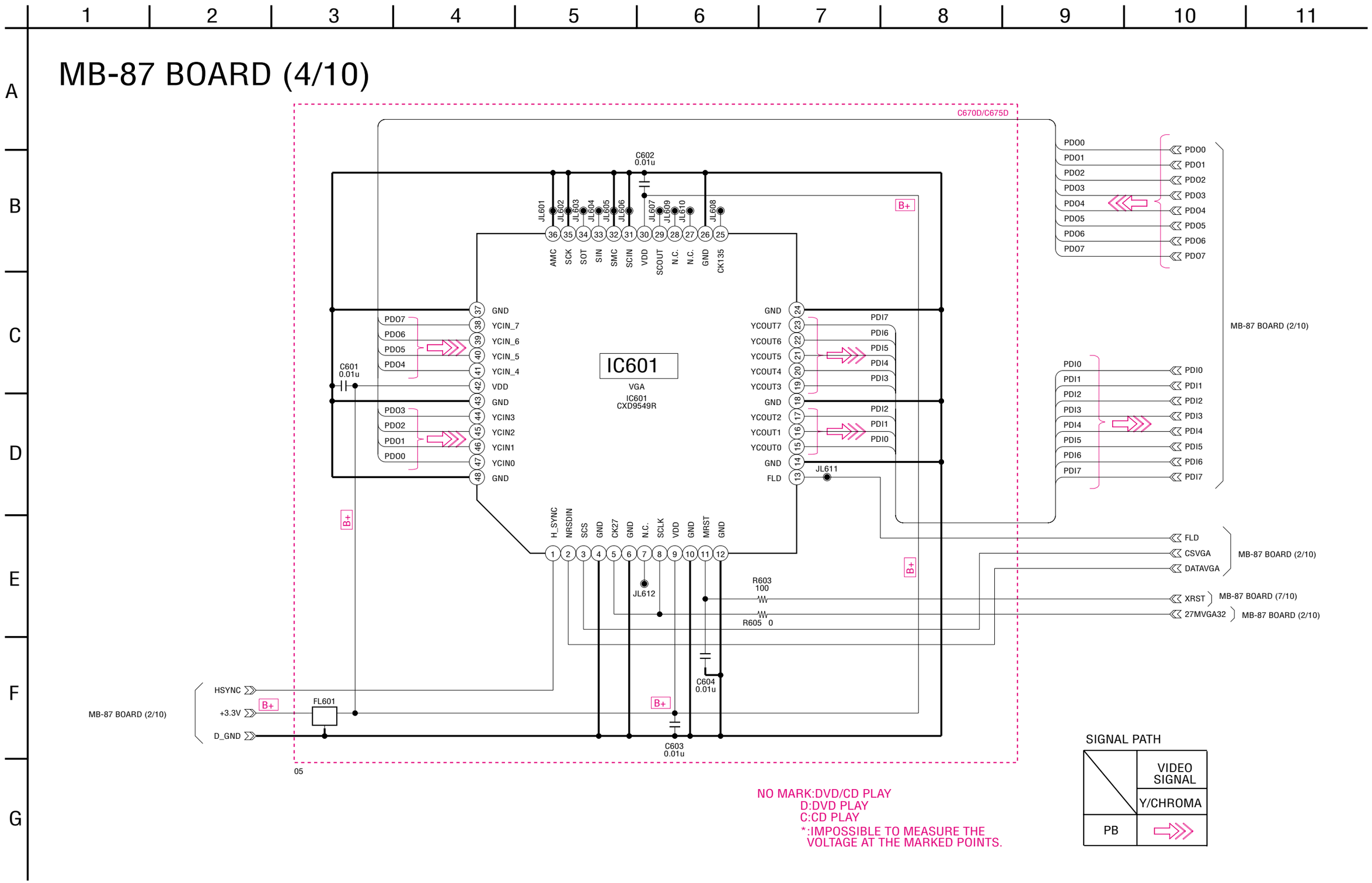
05

SDRAM
MB-87 (3/10)

MB-87 (VGA) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –

MB-87 BOARD (4/10)



NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

SIGNAL PATH

	VIDEO SIGNAL
	Y/CHROMA
PB	⇨

MB-87 (DRIVE) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –

MB-87 BOARD (5/10)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

IC401
FOCUS/TRACKING COIL DRIVE TILT MOTOR DRIVE
IC401
LA6553-TE-L

IC402
SPINDLE/SLED/ MOTOR DRIVE
IC402
LA6553-TE-L

CN405 16P
XDRVMUTE 1
TRK- 2
TRK+ 3
FCS- 4
FCS+ 5
INLIM 6
SLB- 7
SLA+ 8
SLB+ 9
SLA- 10
SPM+ 11
SPM- 12
TIB- 13
TIB+ 14
TIA- 15
TIA+ 16

TK-57 BOARD CN004 (SEE PAGE 4-12)

CN402 5P
RF 1
GND 2
FE 3
TE 4
PI 5

CHECK

MB-87 BOARD (6/10) RF_MON

MB-87 BOARD (2/10) 11V M_GND

MB-87 BOARD (7/10) XDRVMUTE

② MB-87 BOARD (6/10) (SEE PAGE 4-29)

SIGNAL PATH

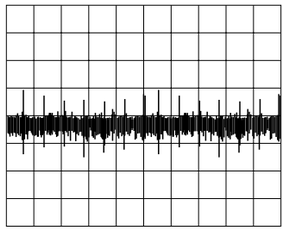
SPINDLE SERVO(SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	
SKEW SERVO DVD/CD	

MB-87 (SERVO DSP) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –

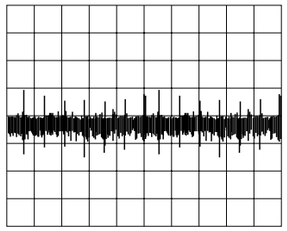
• Waveforms

❶ IC404 ㉒ (DVD play)
100 mV/DIV 50 ms/DIV



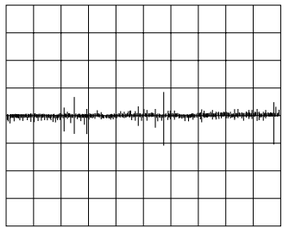
180 mVp-p

❶ IC404 ㉒ (CD play)
500 mV/DIV 50 ms/DIV



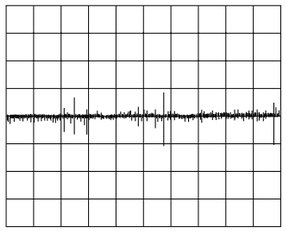
860 mVp-p

❷ IC404 ㉓ (DVD play)
500 mV/DIV 50 ms/DIV

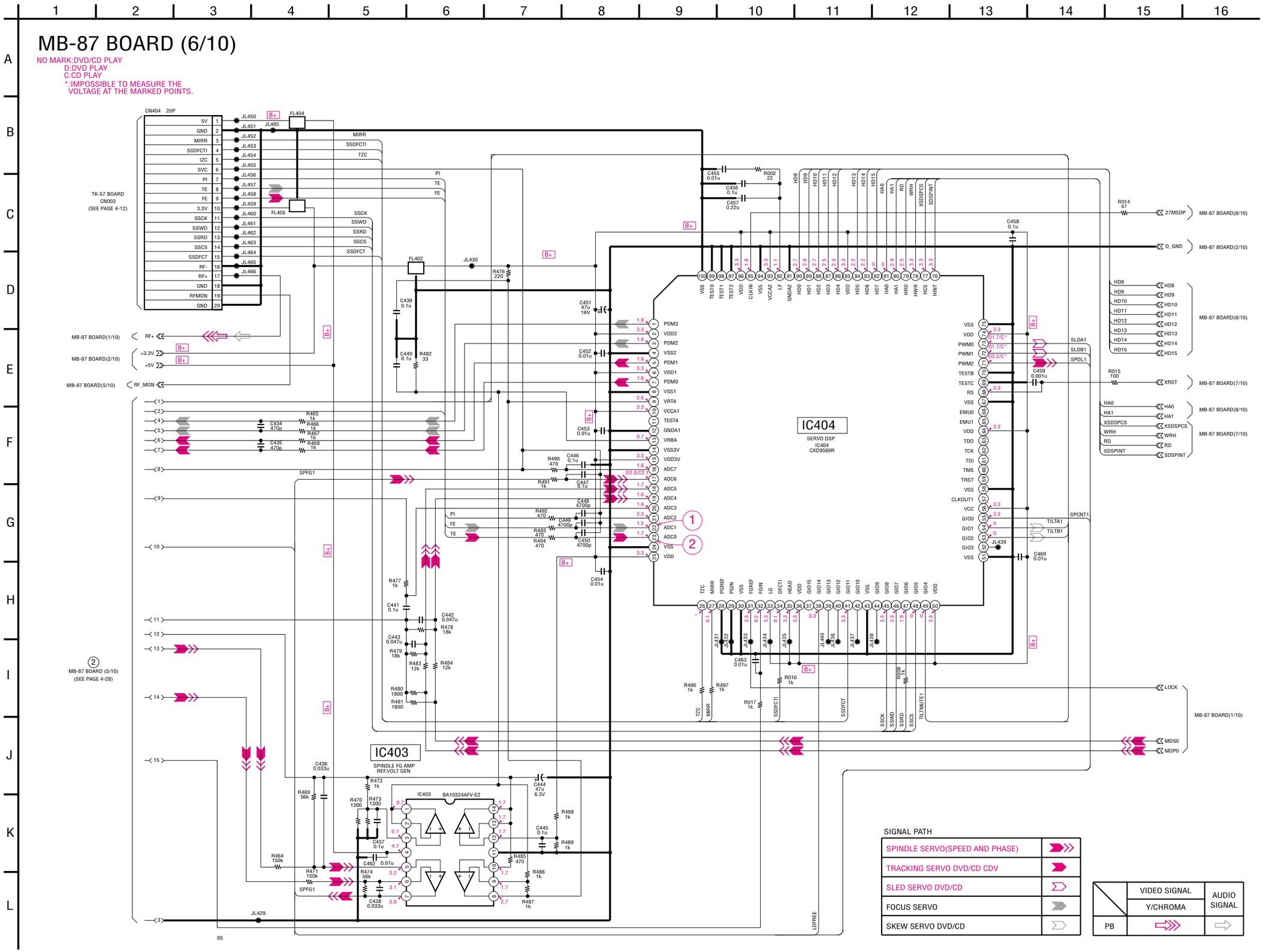


1.4 Vp-p

❷ IC404 ㉓ (CD play)
500 mV/DIV 200 mV/DIV



1.7 Vp-p



SERVO DSP
MB-87 (6/10)

MB-87 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –

MB-87 BOARD (7/10)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

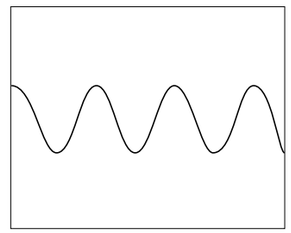
IC101
EEPROM
IC101
BR9040F-D-E2

IC102
SYSTEM CONTROL
IC102
MB91107PFV-G-BND

IC103
RESET
IC103
PST9126NL

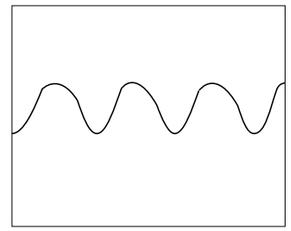
• Waveforms

❶ IC102 (54)



2.4 Vp-p (12.5 MHz)

❷ IC102 (71)

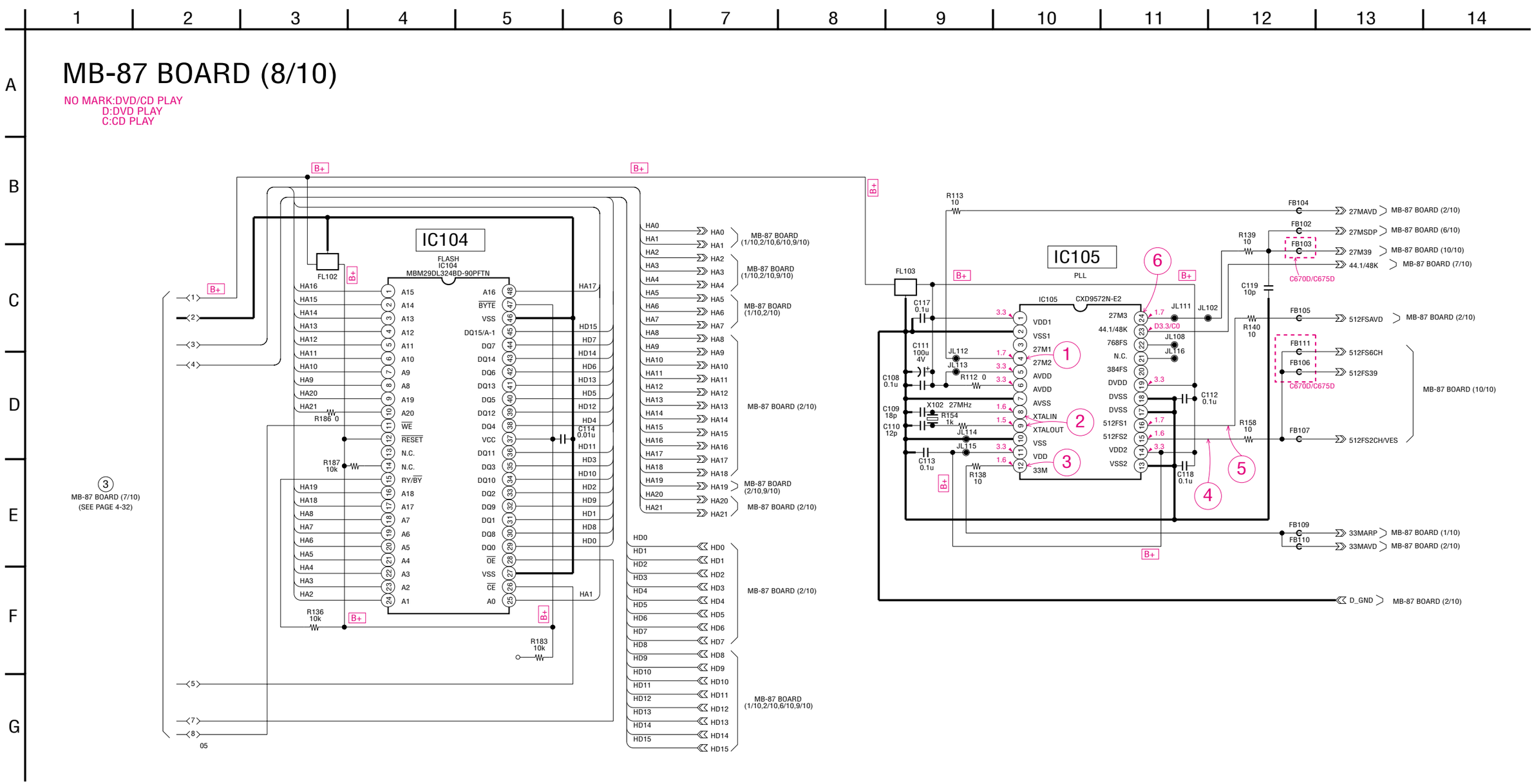


4 Vp-p (25.3 MHz)

MB-87 (MEMORY, CLOCK GENERATOR) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.
– Ref. No.: MB-87 board; 1,000 series –

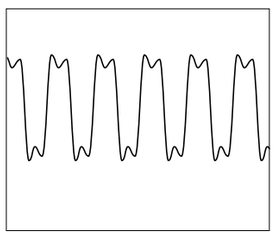
MB-87 BOARD (8/10)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY



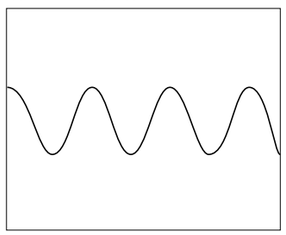
• Waveforms

❶ IC105 ④



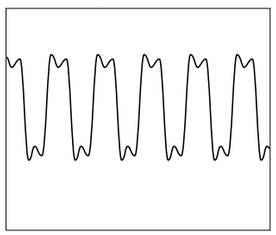
5.2 Vp-p (27 MHz)

❷ IC105 ⑧, ⑨



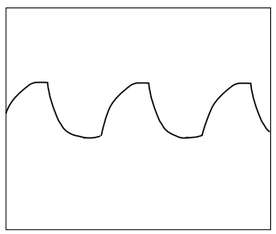
2.5 Vp-p (27 MHz)

❸ IC105 ⑫



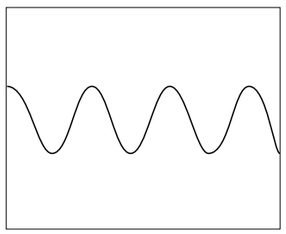
4.9 Vp-p (33.8688 MHz)

❹ IC105 ⑮



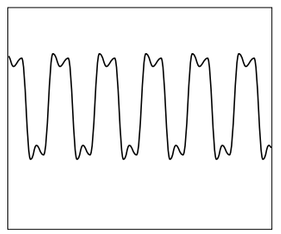
DVD : 3.4 Vp-p (29.5 MHz)
CD : 3.4 Vp-p (22.58 MHz)

❺ IC105 ⑯



DVD : 4.3 Vp-p (29.5 MHz)
CD : 4.3 Vp-p (22.58 MHz)

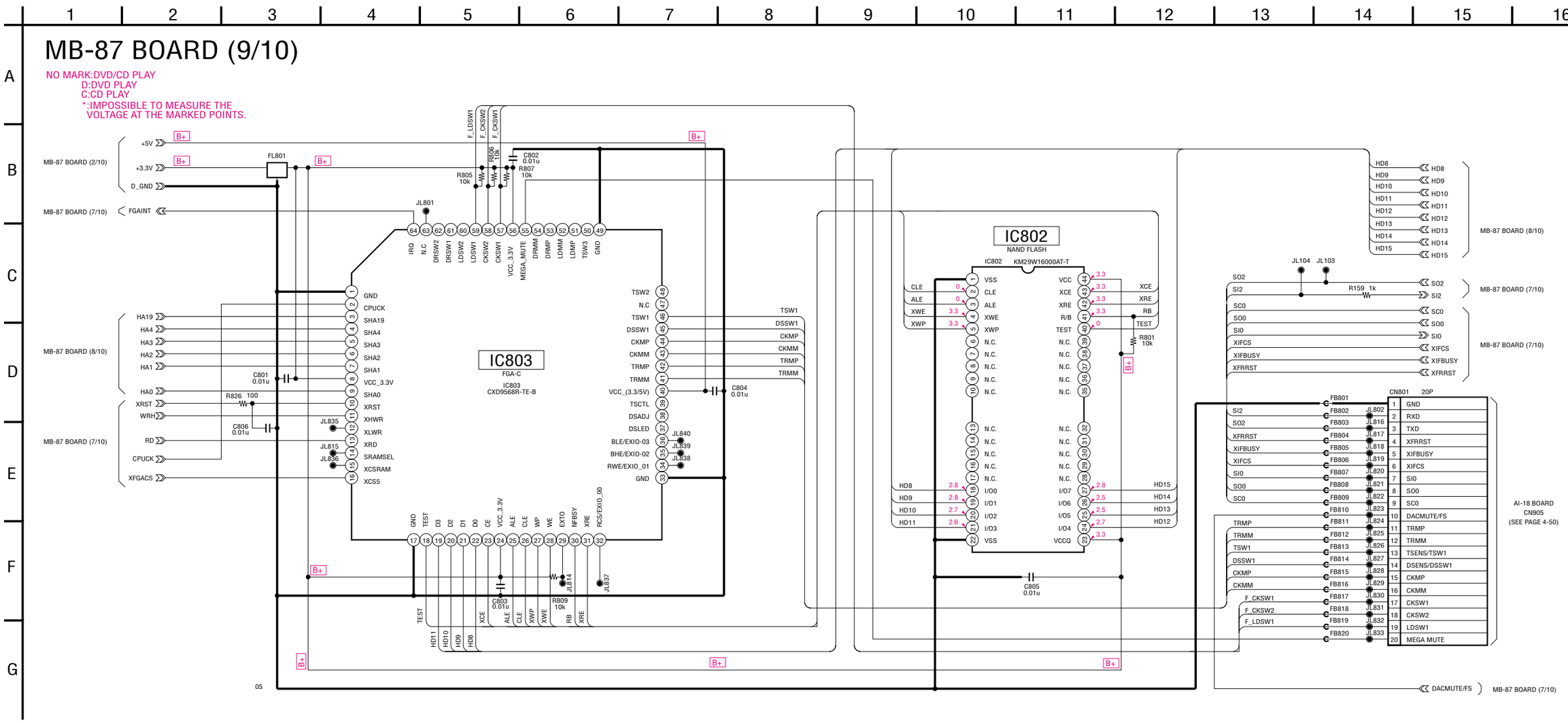
❻ IC105 ㉔



4.9 Vp-p (27.2 MHz)

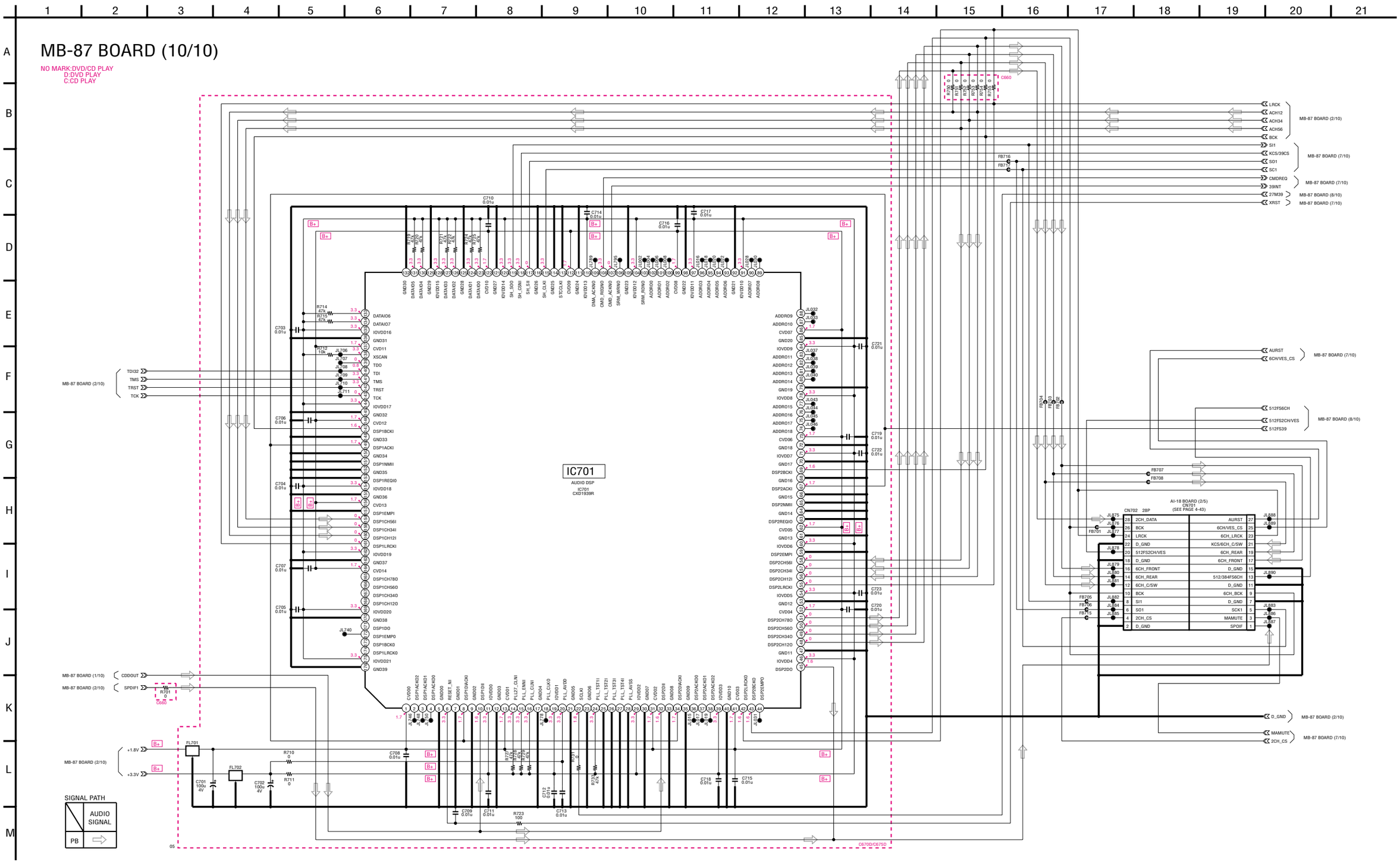
MB-87 (FGA) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –



MB-87 (AUDIO DSP) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-87 board; 1,000 series –



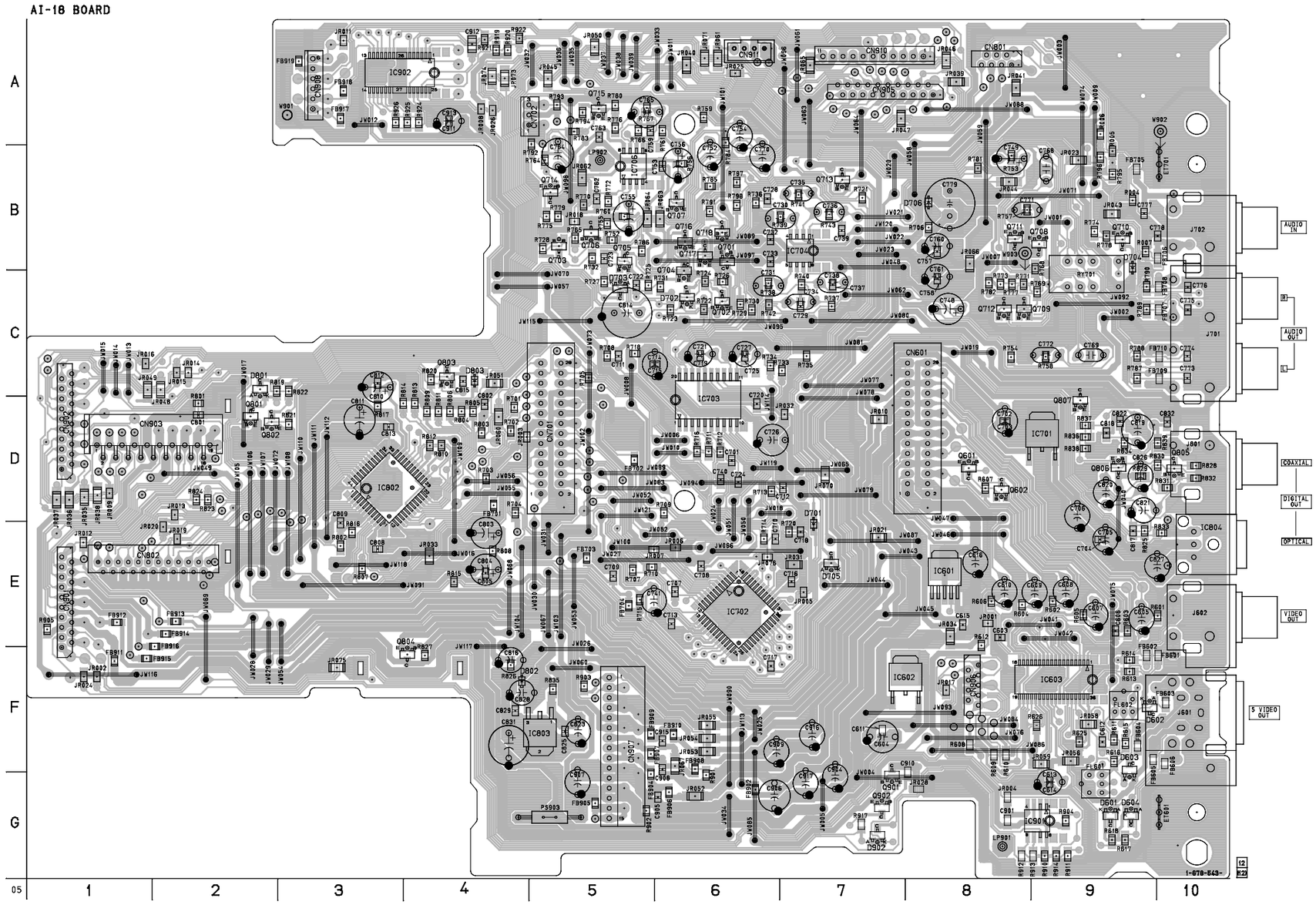
AI-18 (AUDIO, VIDEO BUFFER, D/A CONVERTER, DRIVE) PRINTED WIRING BOARD

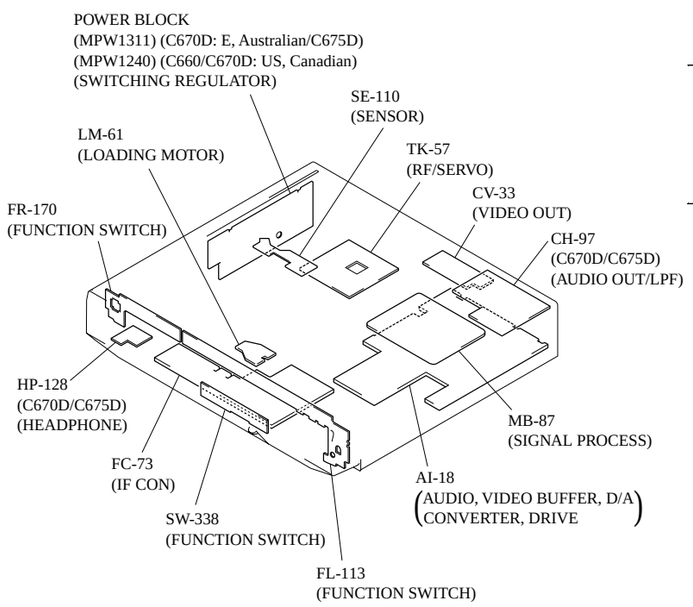
– Ref. No.: AI-18 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

AI-18 BOARD

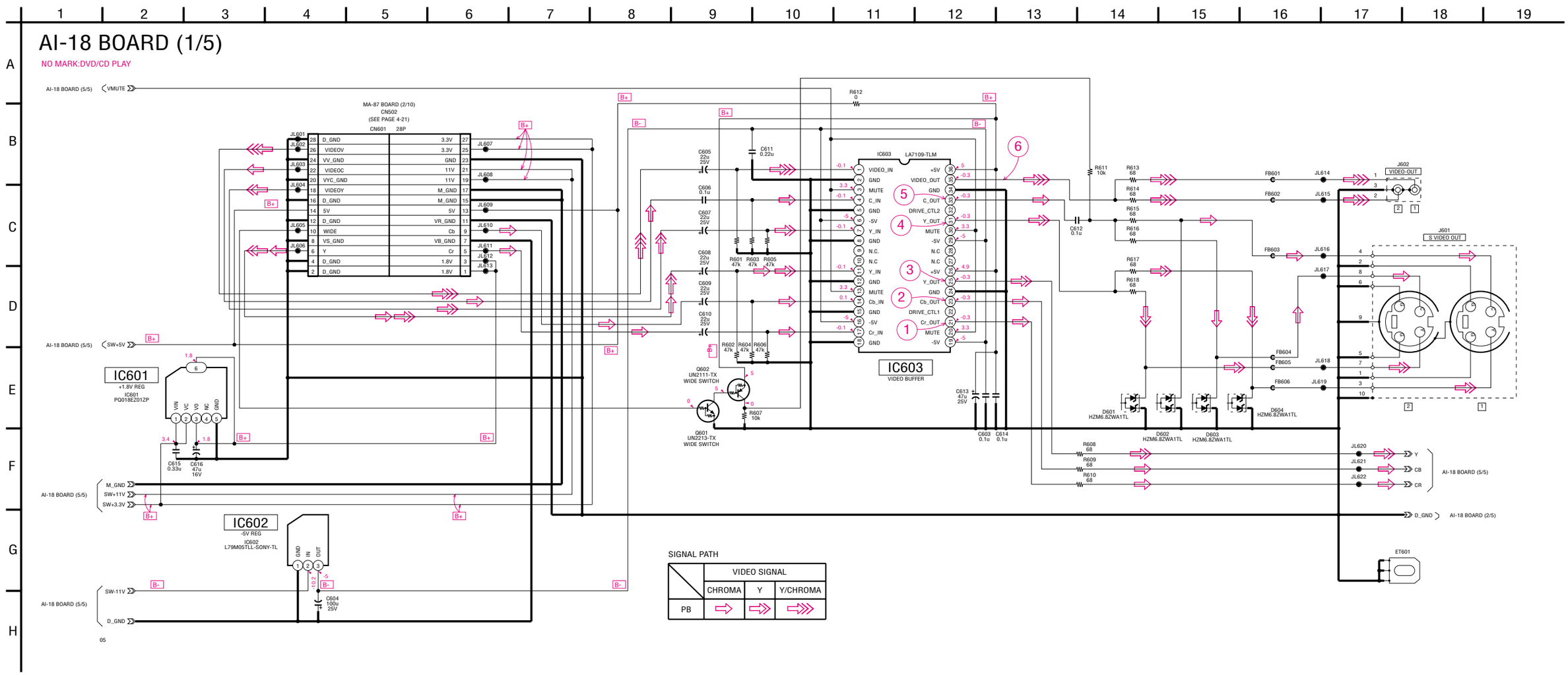
CN601	C-8	IC704	B-7
CN701	D-5	IC706	B-5
CN702	A-5	IC802	D-3
CN801	A-8	IC803	F-5
CN802	E-2	IC804	E-9
CN901	E-1	IC901	G-9
CN902	D-1	IC902	A-3
CN903	D-2		
CN905	A-7	Q601	D-8
CN906	F-8	Q602	D-8
CN907	F-5	Q701	B-6
CN908	A-3	Q702	C-6
CN910	A-7	Q703	B-5
CN911	A-6	Q704	B-6
		Q705	B-5
D601	G-9	Q706	B-5
D602	F-9	Q707	B-6
D603	F-9	Q708	B-9
D604	G-9	Q709	C-8
D701	D-7	Q710	B-9
D702	C-6	Q711	B-8
D703	C-5	Q712	C-8
D704	B-9	Q713	B-7
D705	E-7	Q714	B-5
D706	B-8	Q715	A-5
D801	C-2	Q716	B-6
D802	F-4	Q717	B-6
D803	C-4	Q718	B-6
D902	G-7	Q801	C-2
		Q802	D-2
IC601	E-8	Q803	C-4
IC602	F-8	Q804	E-4
IC603	F-9	Q805	D-10
IC701	D-9	Q806	D-9
IC702	E-6	Q807	D-9
IC703	C-6	Q901	G- 7
		Q902	G- 7





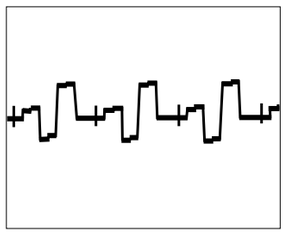
AI-18 (VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-39 for printed wiring board.

– Ref. No.: AI-18 board; 2,000 series –



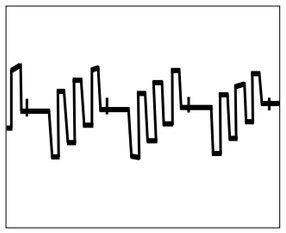
• **Waveforms**

❶ IC603 ㉑



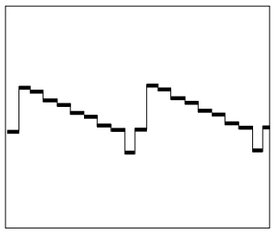
728 mVp-p (H)

❷ IC603 ㉓



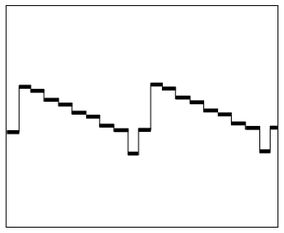
720 mVp-p (H)

❸ IC603 ㉕



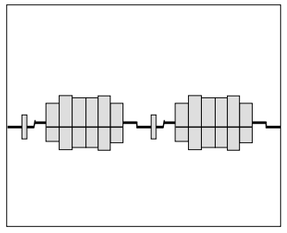
1.0 Vp-p (H)

❹ IC603 ㉛



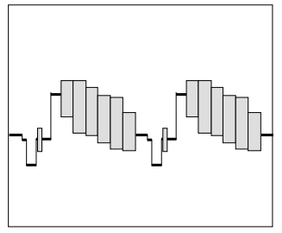
2.1 Vp-p (H)

❺ IC603 ㉝



520 mVp-p (H)

❻ IC603 ㉟



2.4 Vp-p (H)

VIDEO BUFFER
AI-18 (1/5)

AI-18 (D/A CONVERTER, DSP) SCHEMATIC DIAGRAM • **See page 4-39 for printed wiring board.**
– Ref. No.: AI-18 board; 2,000 series –

AI-18 BOARD (2/5)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY

SIGNAL PATH
AUDIO SIGNAL
PB

IC702
VES DSP
IC702
CXD9545Q

IC703
AUDIO D/A CONVERTER
IC703 CXD9544MR

IC701
+5V REG
IC701
L78M05TLL-SONY-TL

Q704 2SB709A-QRS-TX
Q702 DTC124TKA-T146
Q701 UN2213-TX
Q705 2SB709A-QRS-TX MUTE DRIVE
Q703 DTC124TKA-T146 MUTE DRIVE
Q701,702,704 MUTE DRIVE

D702 DAN202K-T-146
D703 DAN202K-T-146
D701 1SS355TE-17

MB-87 BOARD (10/10)
CN702
(SEE PAGE 4-38)
CN701 28P

JL701	27	AURST	2CH_DATA	28	JL710
JL702	25	6CH/VES_CS	BCK	26	JL711
JL703	23	6CH_LRCK	LRCK	24	JL712
JL704	21	KCS/6CH_C/SW	D_GND	22	JL713
JL705	19	6CH_REAR	512FS2H/VES	20	
	17	6CH_FRONT	D_GND	18	JL714
JL706	15	D_GND	6CH_FRONT	16	JL715
	13	512/384FS6CH	6CH_REAR	14	JL716
	11	D_GND	6CH_C/SW	12	
	9	6CH_BCK	BCK	10	JL717
	7	D_GND	SI1	8	JL718
JL707	5	SCK1	SO1	6	JL719
JL708	3	MAMUTE	2CH_CS	4	JL720
JL709	1	SPDIF	D_GND	2	

*R712
0:C660
220:C670D/C675D

AI-18 (AMP, LPF) SCHEMATIC DIAGRAM • See page 4-39 for printed wiring board.

– Ref. No.: AI-18 board; 2,000 series –

AI-18 BOARD (3/5)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY

SIGNAL PATH

AUDIO SIGNAL

PB

IC706 HEADPHONE AMP

IC704 AMP/LPF

Q716-718 MUTE DRIVE

Q710 2SD601A-QRS-TX RELAY DRIVE

Q712 2SD1938(F)-T(TX).SO FILTER CONT

Q713 UN2113-TX FILTER CONT DRIVE

Q708,709 MUTE

*C771,772 3300p:C670D/C675D 3900p:C660

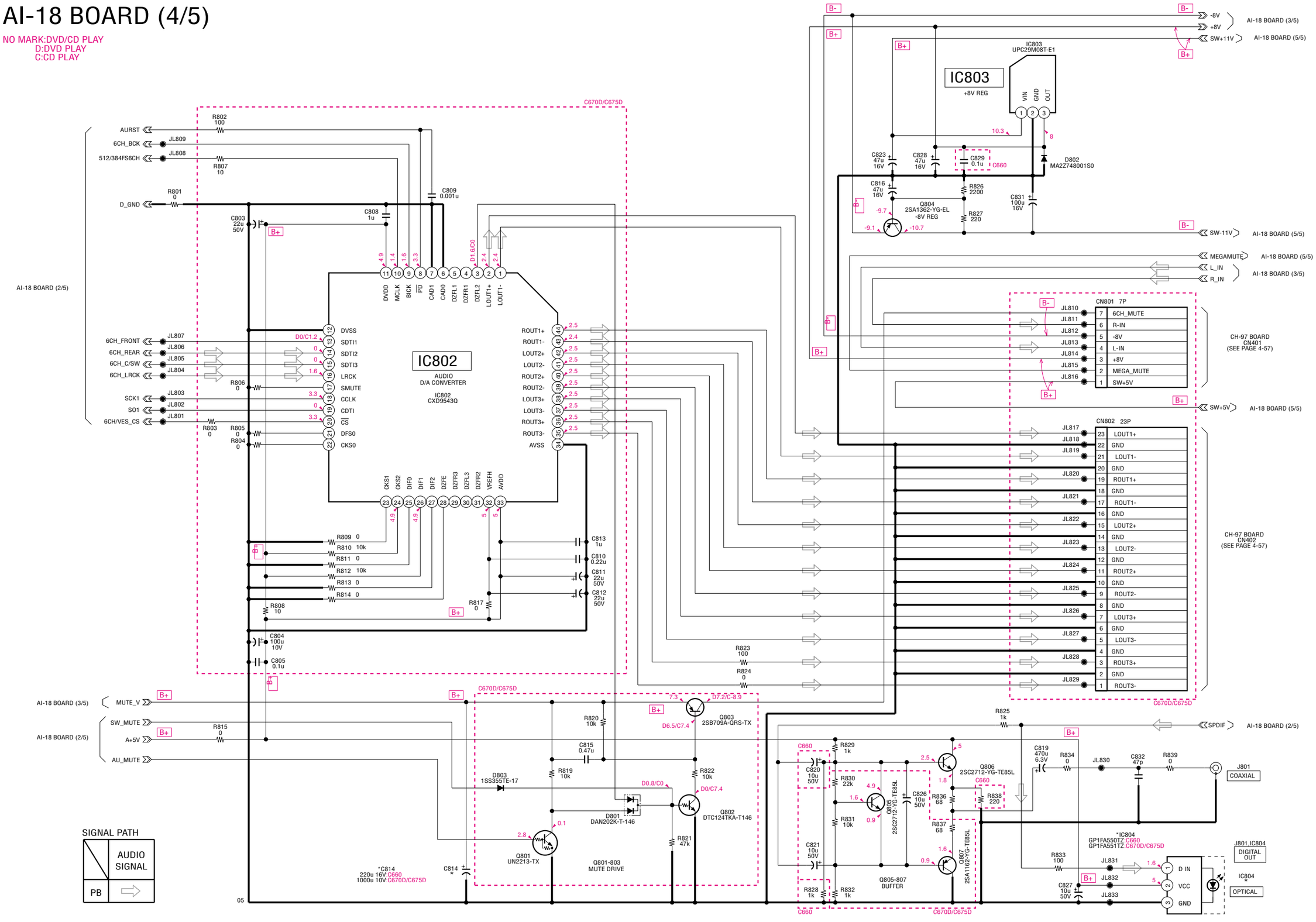
AMP, LPF
AI-18 (3/5)

AI-18 (D/A CONVERTER) SCHEMATIC DIAGRAM • See page 4-39 for printed wiring board.

– Ref. No.: AI-18 board; 2,000 series –

AI-18 BOARD (4/5)

NO MARK:DVD/CD PLAY
D:DVD PLAY
C:CD PLAY



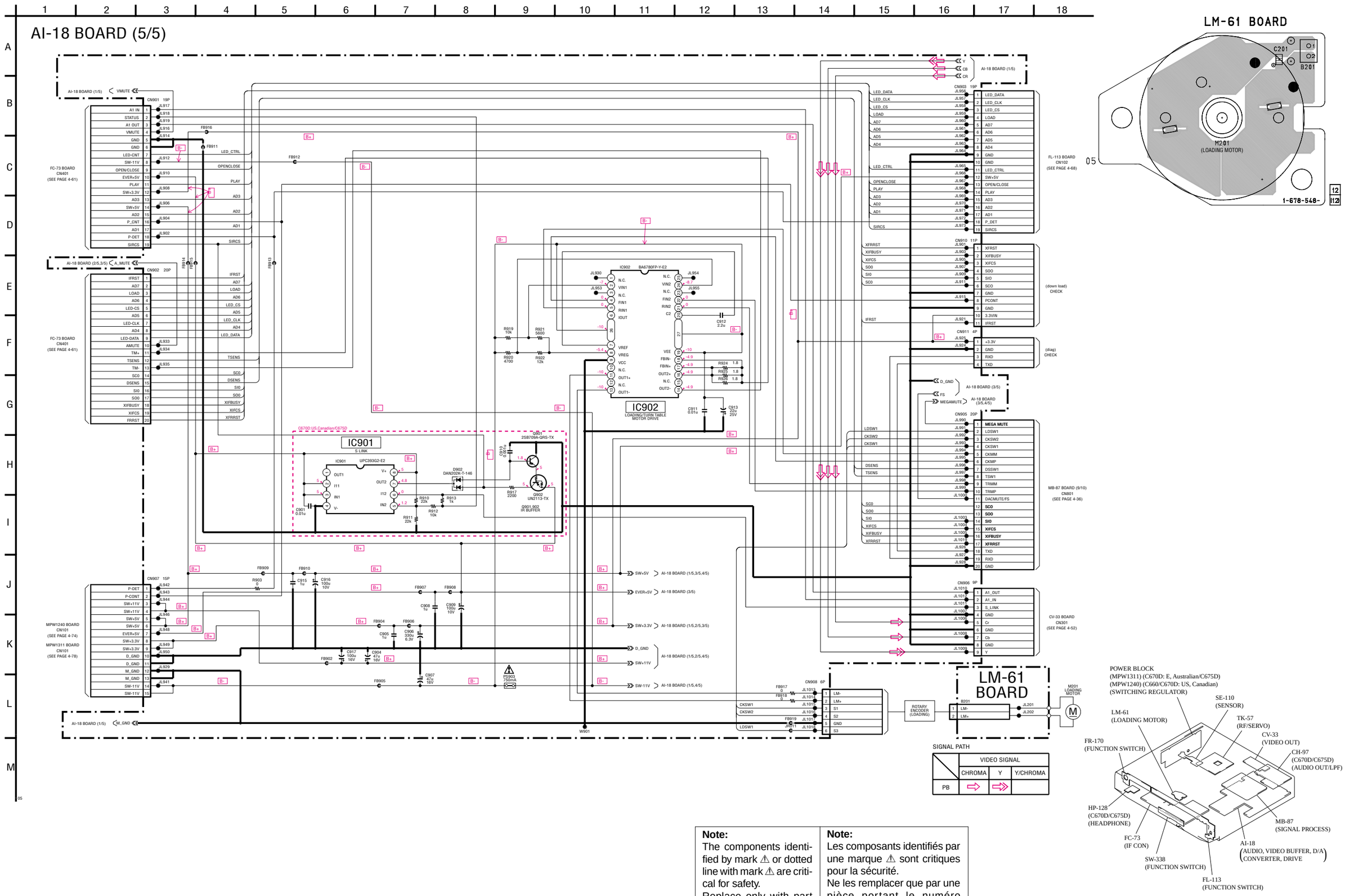
D/A CONVERTER
AI-18 (4/5)

AI-18 (DRIVE) SCHEMATIC DIAGRAM, LM-61 (LOADING MOTOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

• See page 4-39 for AI-18 printed wiring board.

– Ref. No.: AI-18 board, LM-61 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

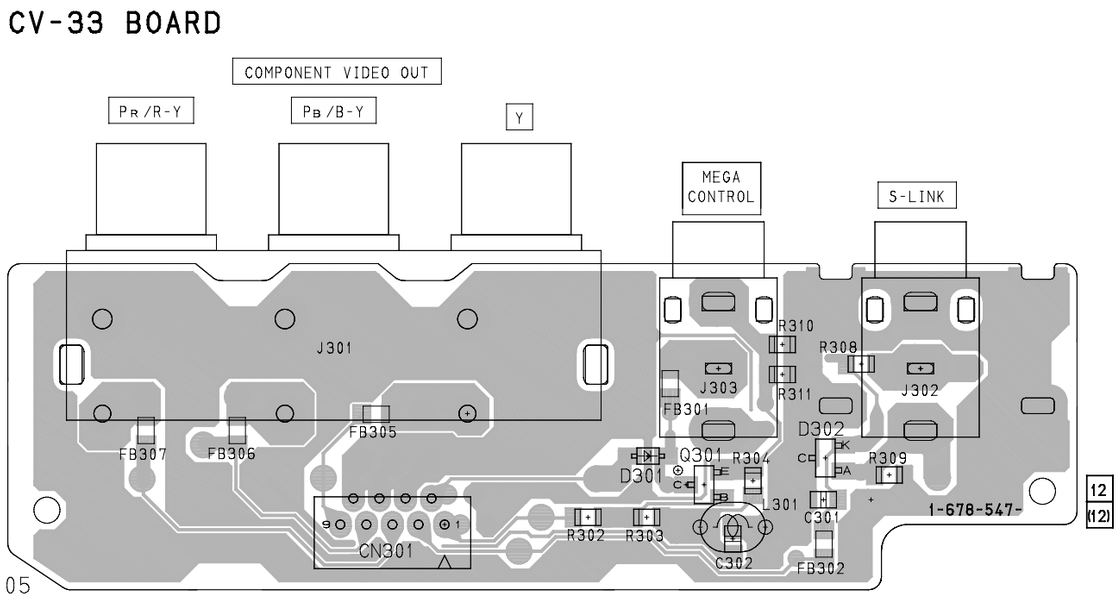


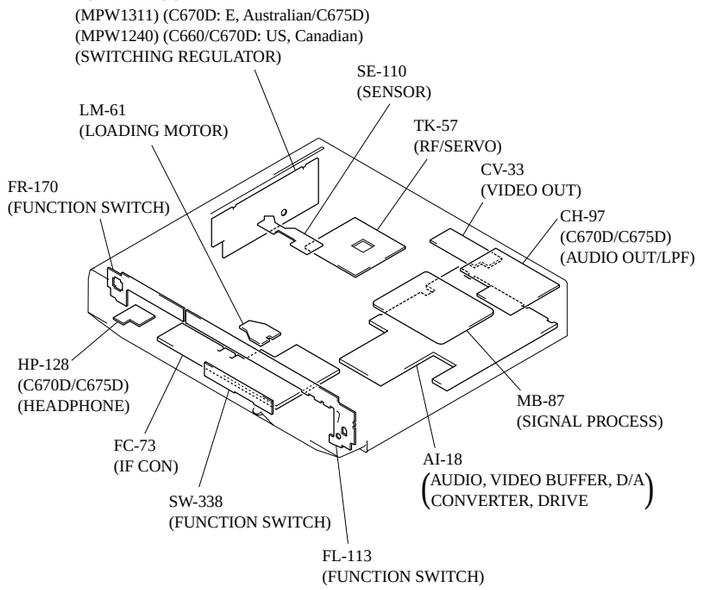
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

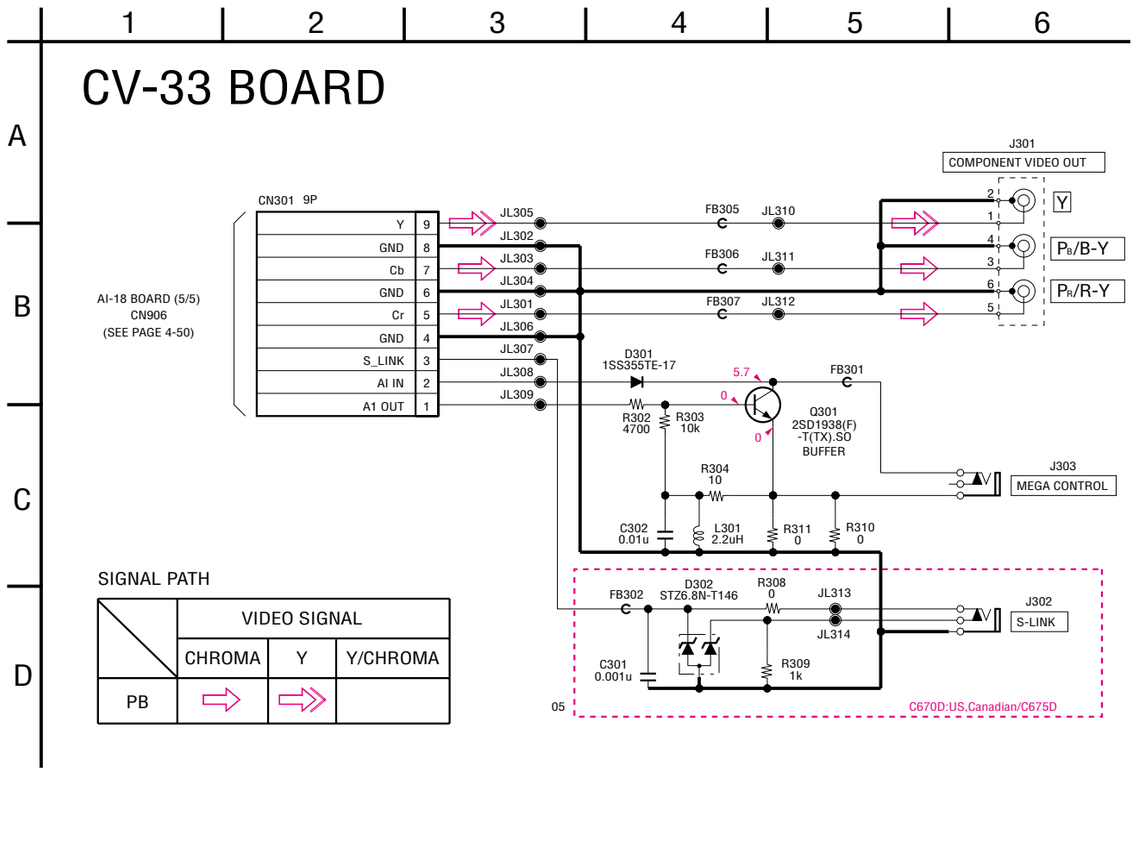
CV-33 (VIDEO OUT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: CV-33 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

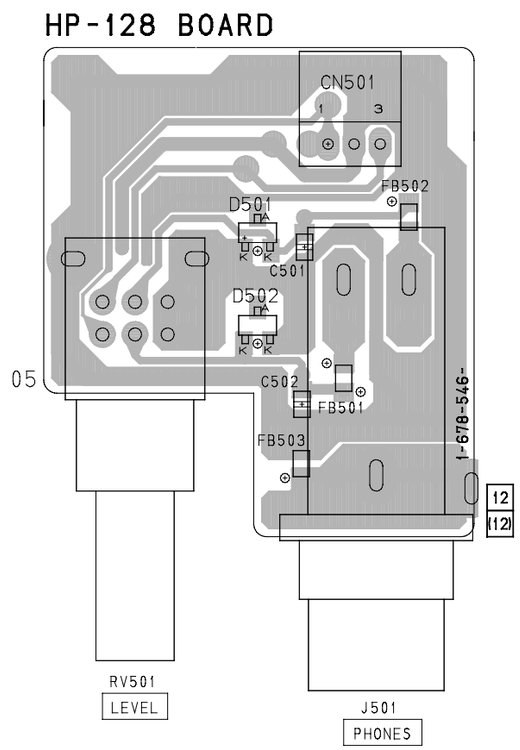


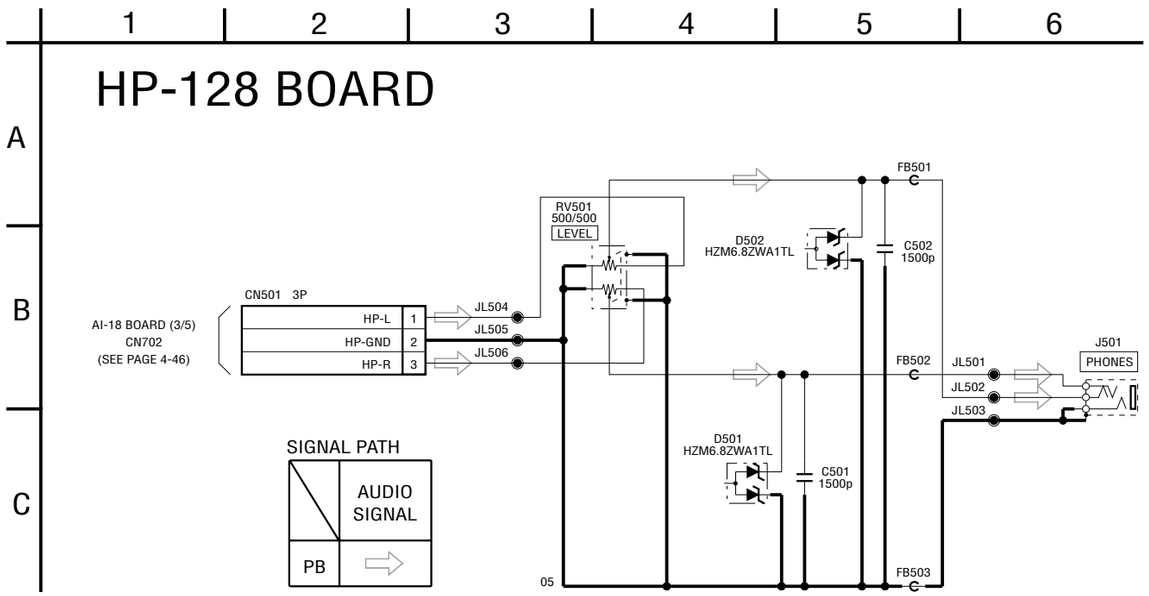


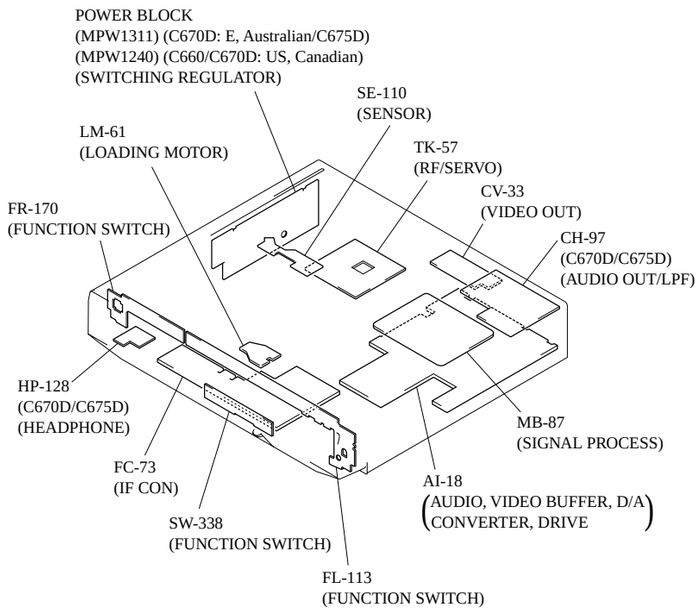


HP-128 (HEADPHONE) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: HP-128 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.







CH-97 (AUDIO OUT/LPF) PRINTED WIRING BOARDS

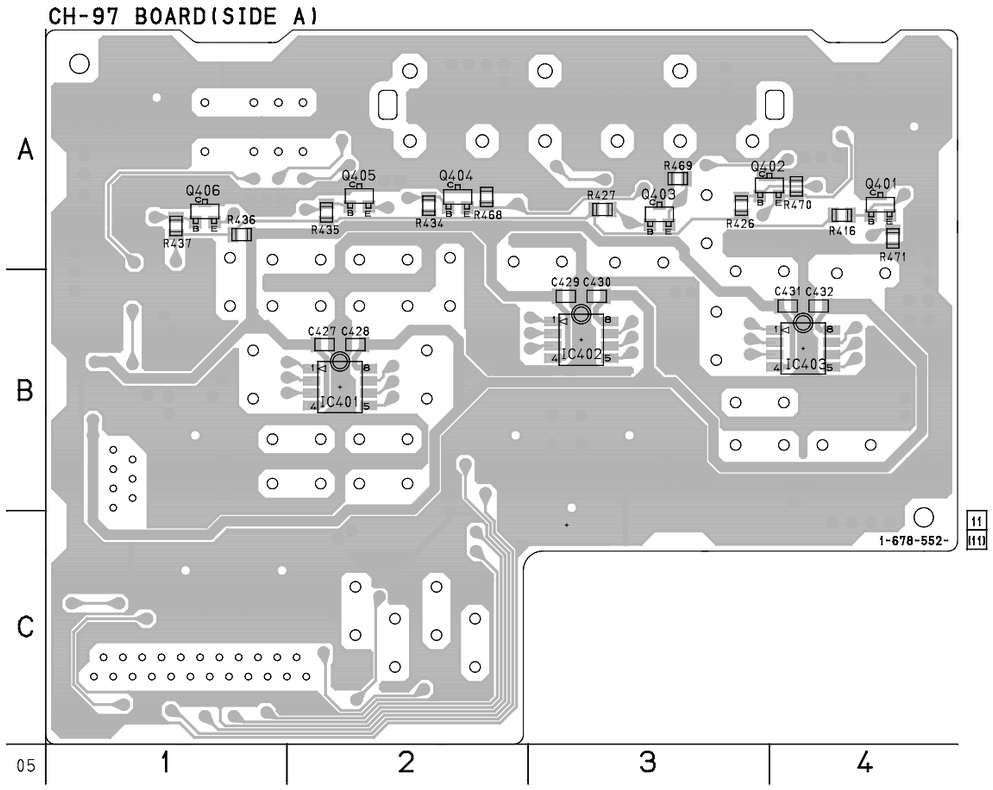
– Ref. No.: CH-97 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

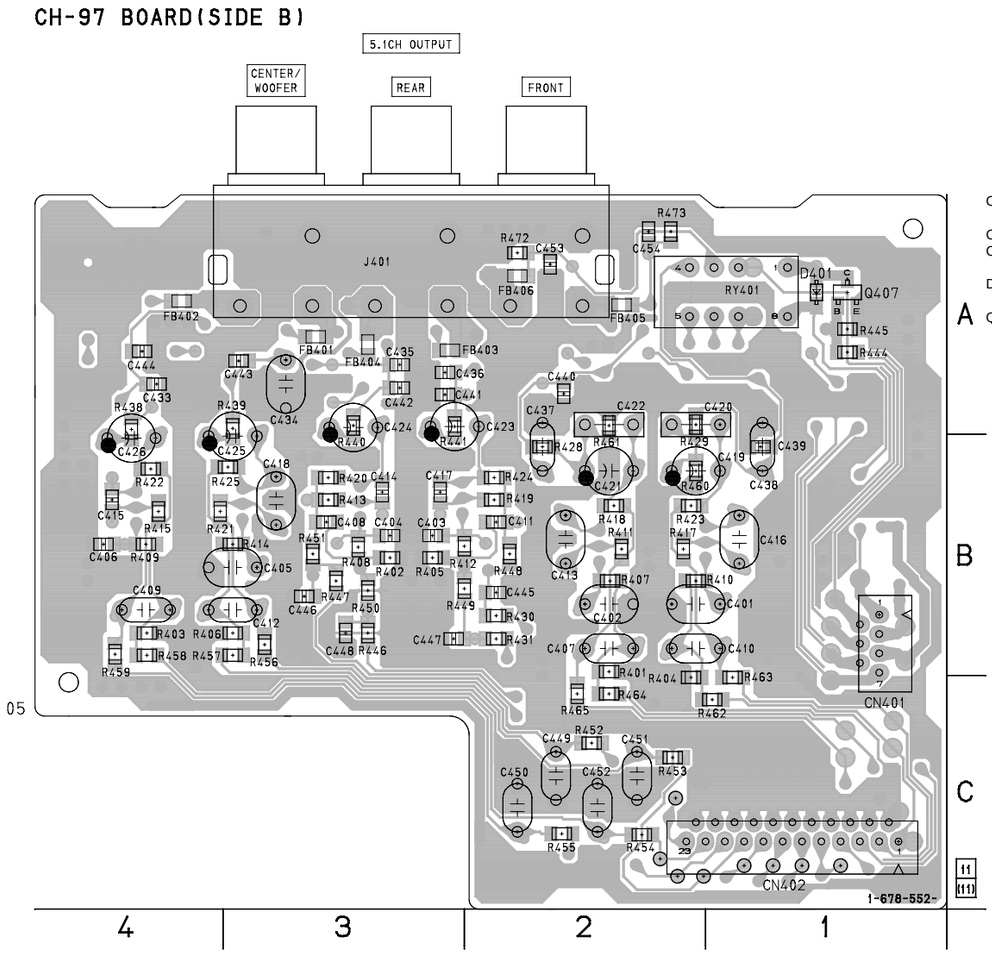
CH-97 BOARD (SIDE A)

IC401	B-2
IC402	B-3
IC403	B-4
Q401	A-4
Q402	A-3
Q403	A-3
Q404	A-2
Q405	A-2
Q406	A-1

CH-97 BOARD(SIDE A)

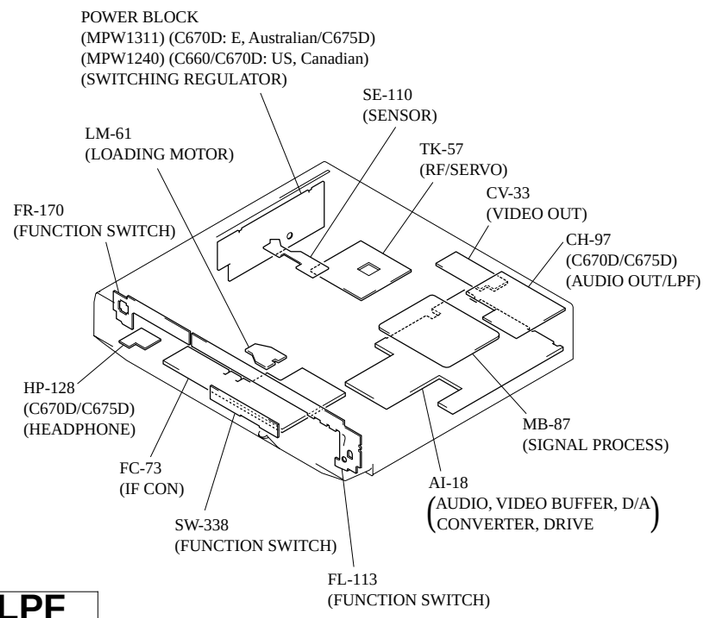


CH-97 BOARD(SIDE B)



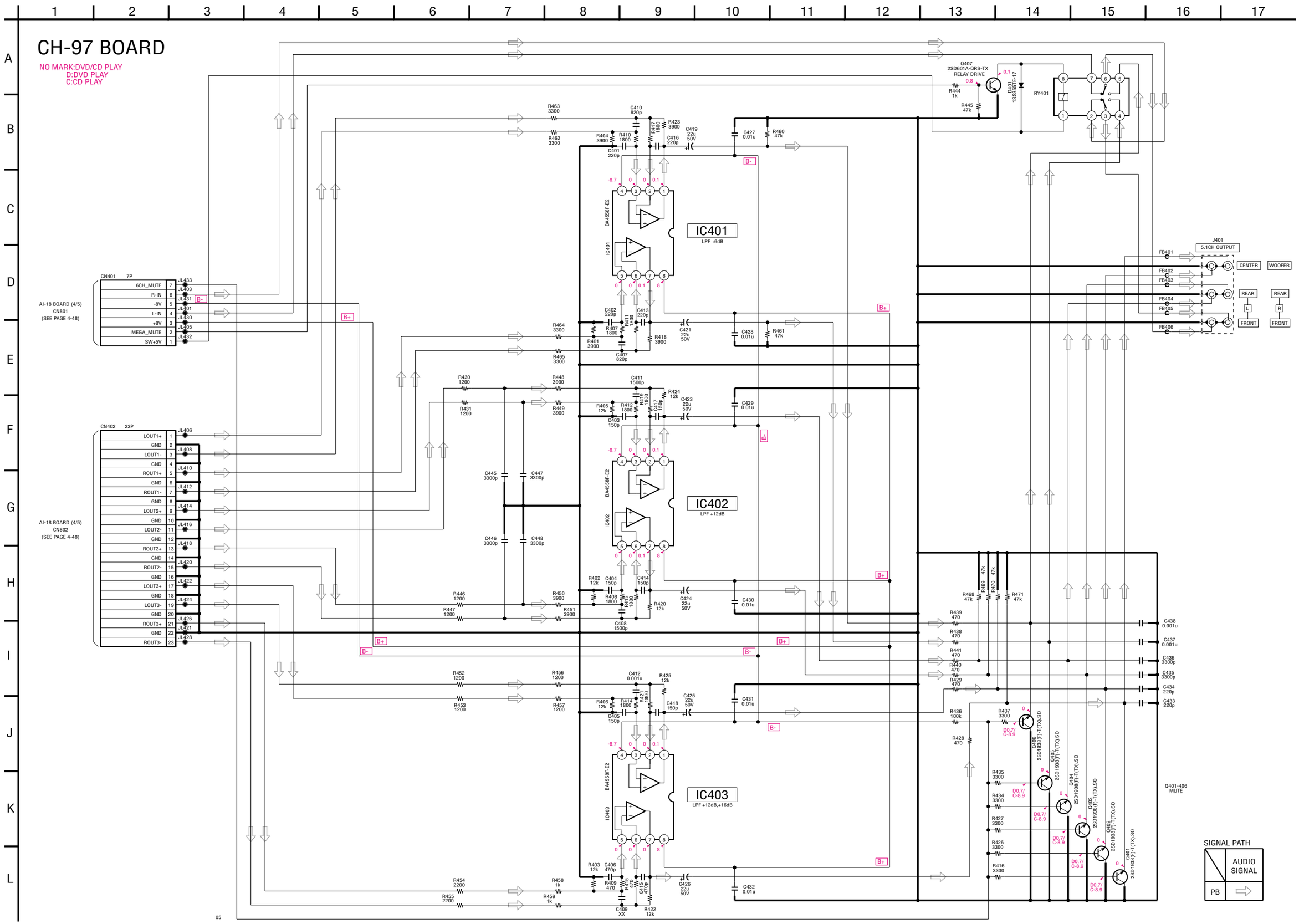
CH-97 BOARD (SIDE B)

CN401	C-1
CN402	C-1
D401	A-1
Q407	A-1



CH-97 (AUDIO OUT/LPF) SCHEMATIC DIAGRAM

– Ref. No.: CH-97 board; 2,000 series –



AUDIO OUT/LPF
CH-97

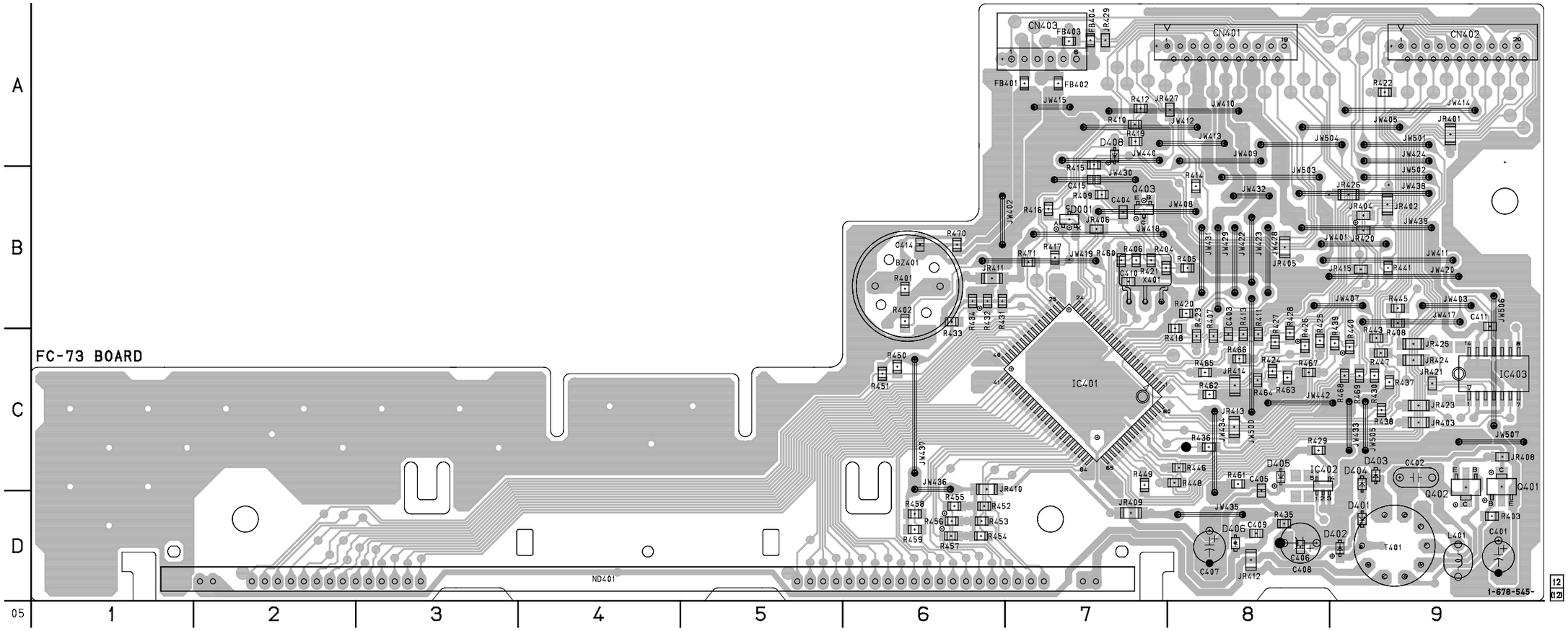
FC-73 (IF CON) PRINTED WIRING BOARD

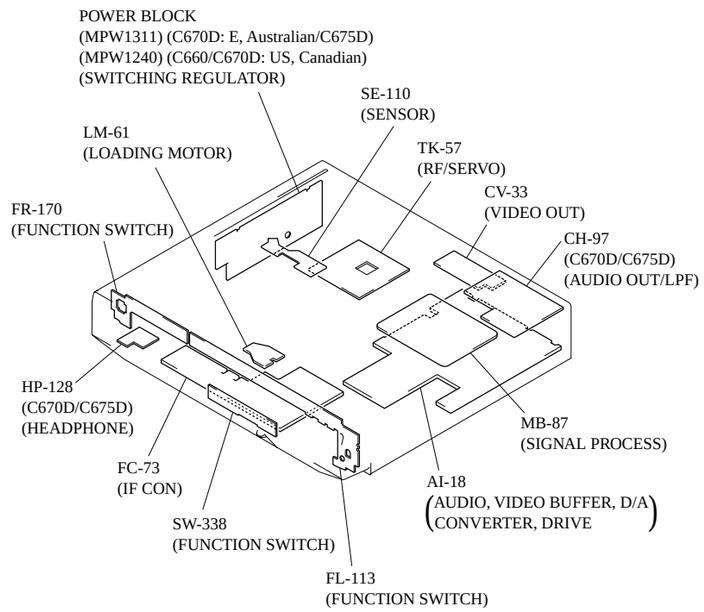
– Ref. No.: FC-73 board; 3,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

FC-73 BOARD

CN401	A-8
CN402	A-9
CN403	A-7
D001	B-7
D401	D-9
D402	D-9
D403	C-9
D404	C-9
D405	C-8
D406	D-8
D408	A-7
IC401	C-7
IC402	C-8
IC403	C-9
Q401	C-9
Q402	D-9
Q403	B-7





FC-73 (IF CON) SCHEMATIC DIAGRAM

– Ref. No.: FC-73 board; 3,000 series –

FC-73 BOARD

NO MARK:DVD/CD PLAY
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

CN401 19P
A1 IN 1
STATUS 2
A1 OUT 3
VMUTE 4
GND 5
GND 6
LED-CNT 7
SW-11V 8
OPEN/CLOSE 9
EVER+5V 10
PLAY 11
SW+3.3V 12
AD3 13
SW+5V 14
AD2 15
P_CNT 16
AD1 17
P-DET 18
SIRCS 19

AI-18 BOARD (5/5) CN901 (SEE PAGE 4-49)

CN402 20P
IFRST 1
AD7 2
LOAD 3
AD6 4
LED-CS 5
AD5 6
LED-CLK 7
AD4 8
LED-DATA 9
AMUTE 10
TM+ 11
TSENS 12
TM- 13
SC0 14
DSENS 15
SI0 16
SO0 17
XIFBUSY 18
XIFCS 19
FRRST 20

AI-18 BOARD (5/5) CN902 (SEE PAGE 4-49)

CN403 6P
DSENS 1
SW+5V 2
TSENS 3
GND 4
TM+ 5
TM- 6

SE-110 BOARD CN501 (SEE PAGE 4-14)

IC403
BUFFER
IC403
TC74HCT08AF(EL)

IC401
IF COM
IC401
M38B57M6-150FP

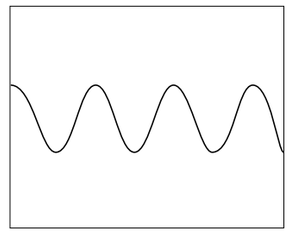
IC402
RESET
IC402
PST9140NL

ND401
FLUORESCENT INDICATOR TUBE

Q403 UN2213-TX BUFFER
Q401,402 DC/DC CONVERTER
Q401 2SD1624-T-TD
Q402 2SD1624-T-TD
T401 DC/DC CONVERTER
D001 DAP202K-T-146
D408 1SS355TE-17
D401 MA113-(TX)
D402 MA113-(TX)
D403 MA113-(TX)
D404 MA113-(TX)
D405 1SS355TE-17
D406 MA8075-H-TX
X401 4MHz
BZ401

• Waveform

❶ IC401 ⑮



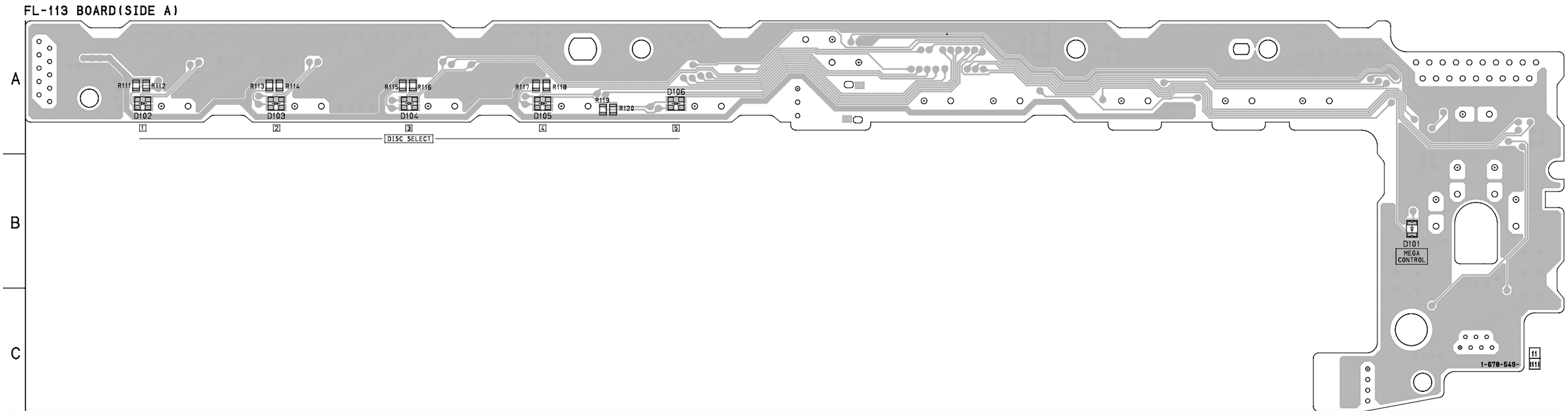
3.2 Vp-p (4 MHz)

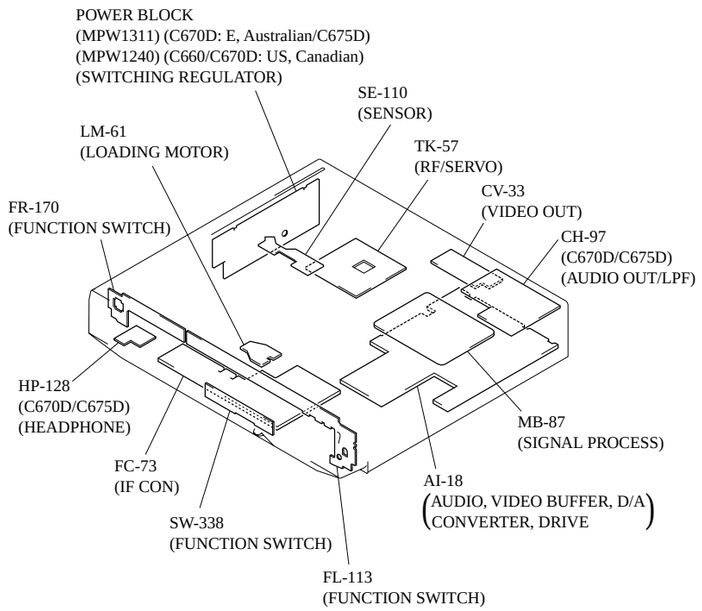
FL-113 (FUNCTION SWITCH), SW-338 (FUNCTION SWITCH) PRINTED WIRING BOARDS

– Ref. No.: FL-113 board, SW-338 board; 4,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

FL-113 BOARD(SIDE A)

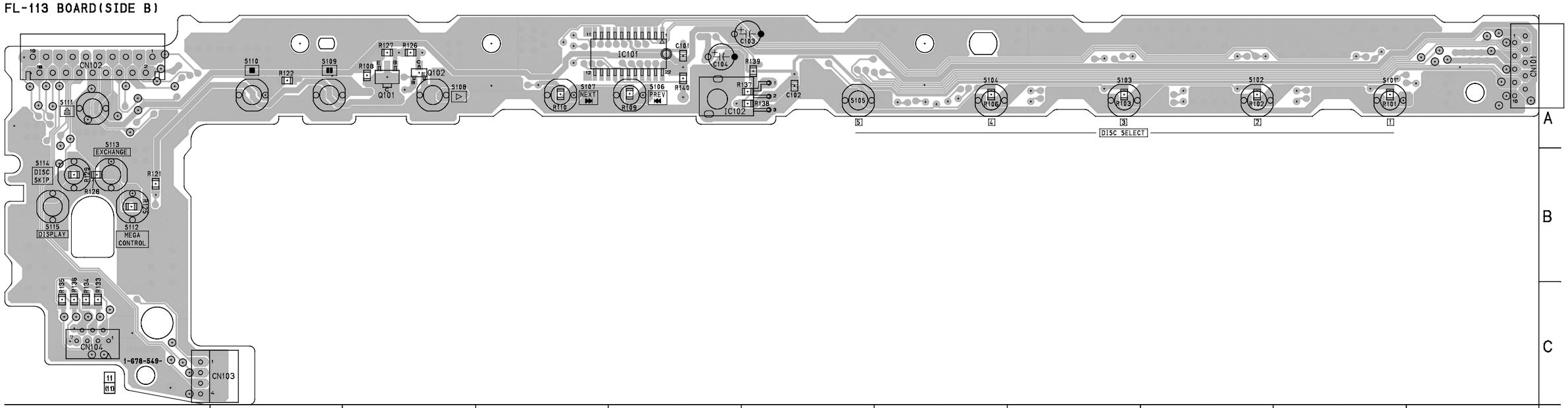




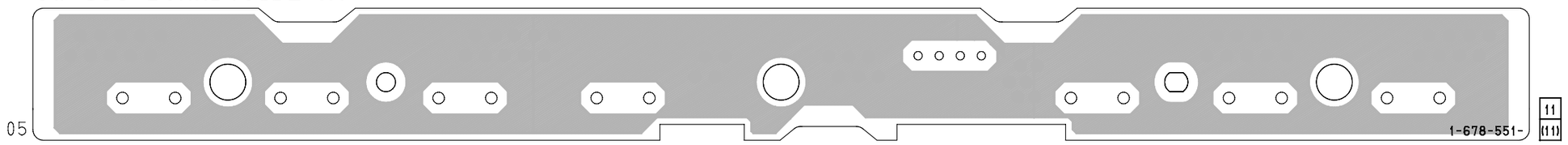
FL-113 BOARD (SIDE A)

D101	B-11
D102	A-1
D103	A-2
D104	A-3
D105	A-4
D106	A-5

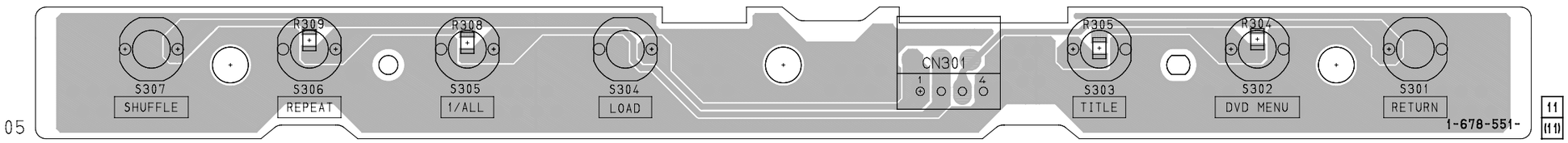
FL-113 BOARD(SIDE B)



SW-338 BOARD(SIDE A)



SW-338 BOARD(SIDE B)

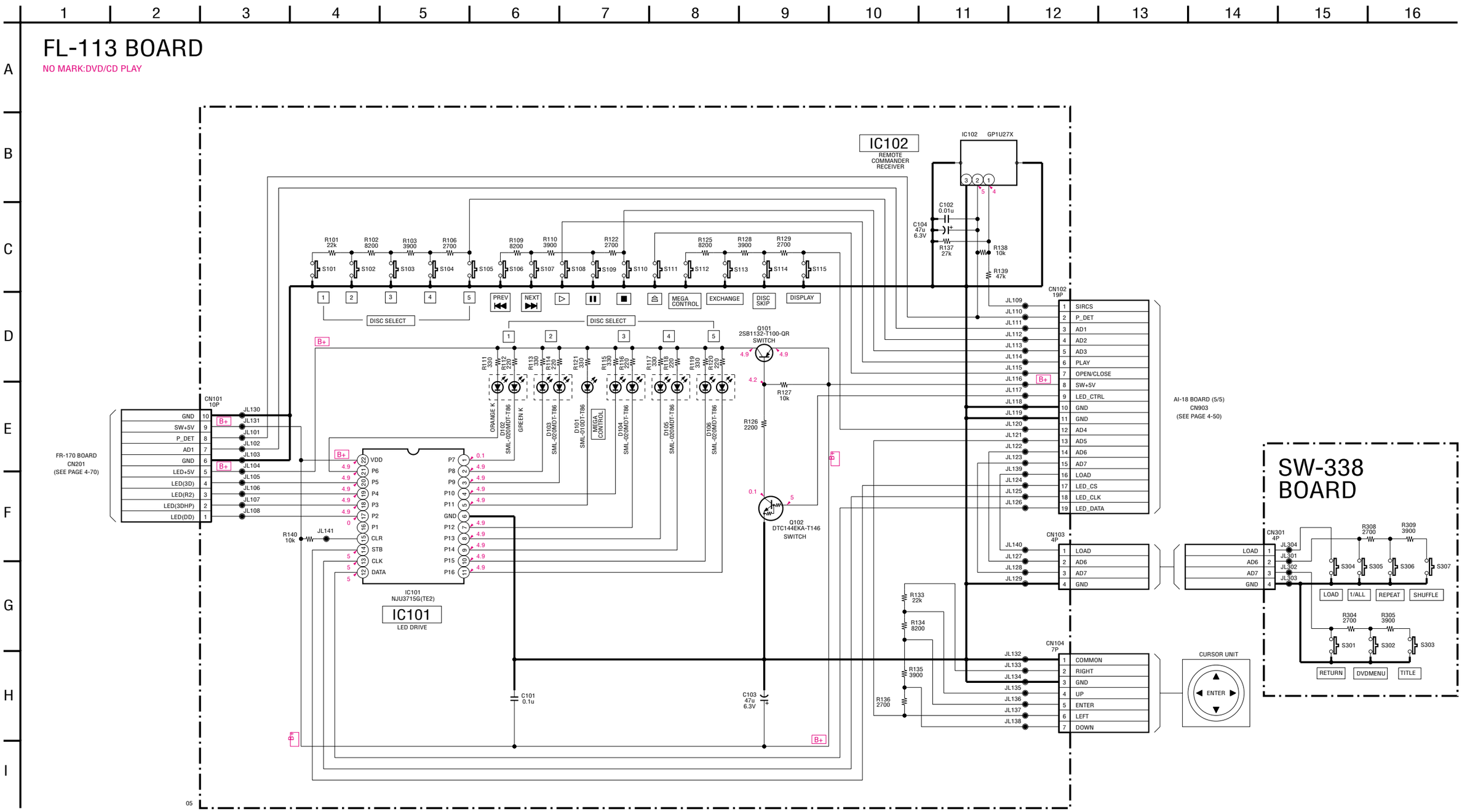


FL-113 BOARD (SIDE B)

CN101	A-1
CN102	A-11
CN103	C-10
CN104	C-11
IC101	A-7
IC102	A-7
Q101	A-9
Q102	A-9

FL-113 (FUNCTION SWITCH), SW-338 (FUNCTION SWITCH) SCHEMATIC DIAGRAM

– Ref. No.: FL-113 board, SW-338 board; 4,000 series –

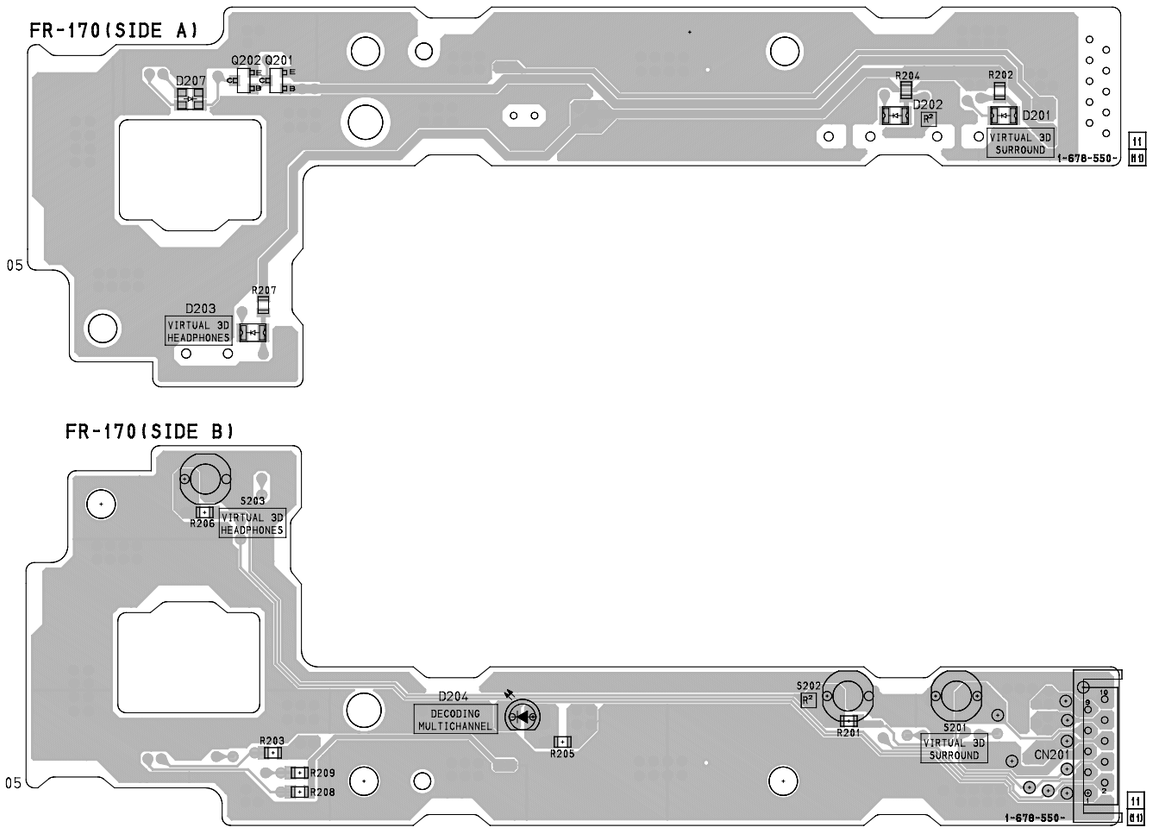


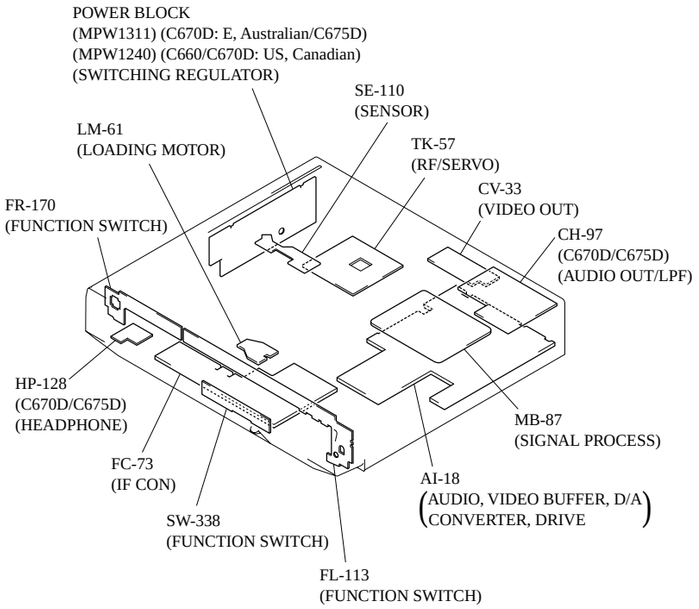
FUNCTION SWITCH
FL-113, SW-338

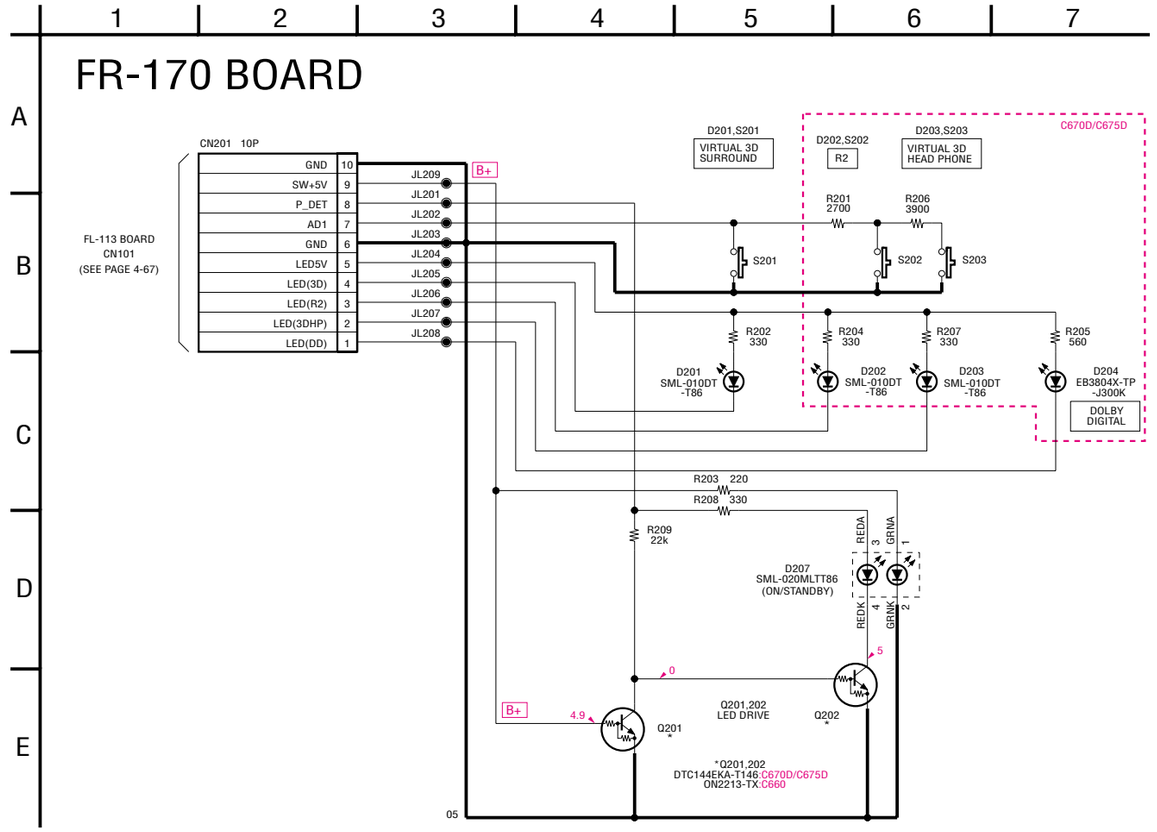
FR-170 (FUNCTION SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: FR-170 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.







MPW1240 (SWITCHING REGULATOR) PRINTED WIRING BOARD

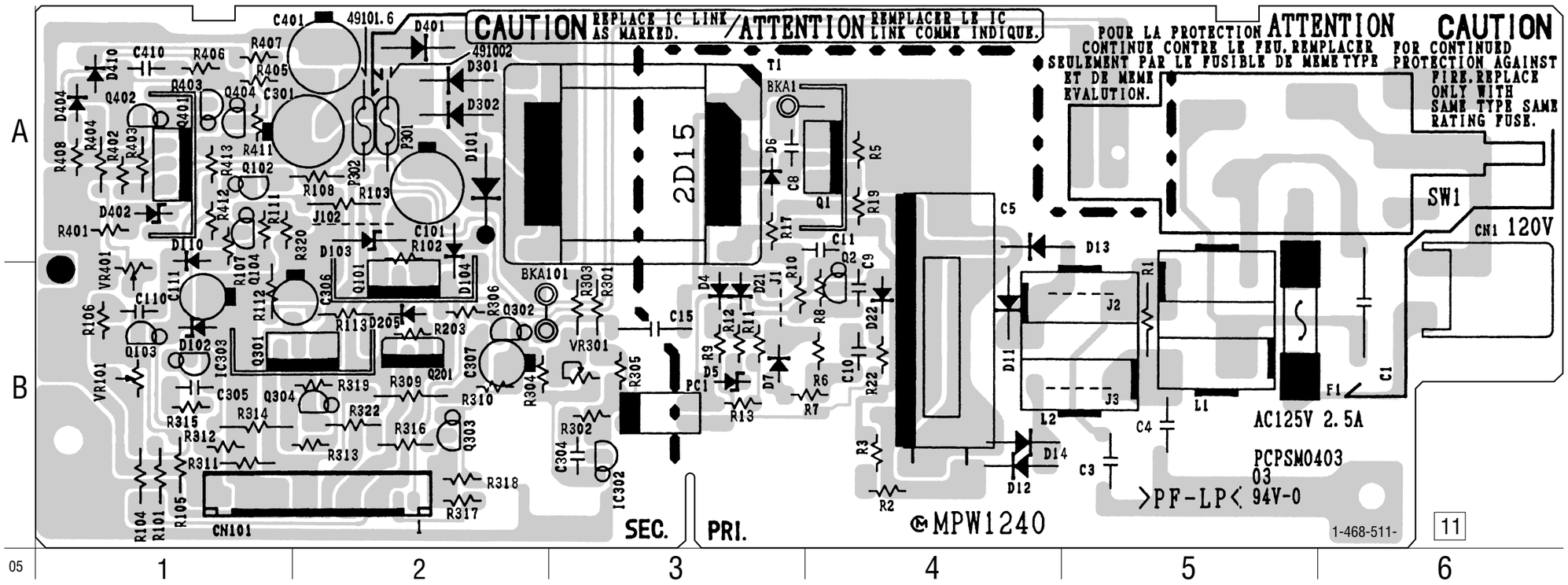
– Ref. No.: MPW1240 board; 5,000 series –

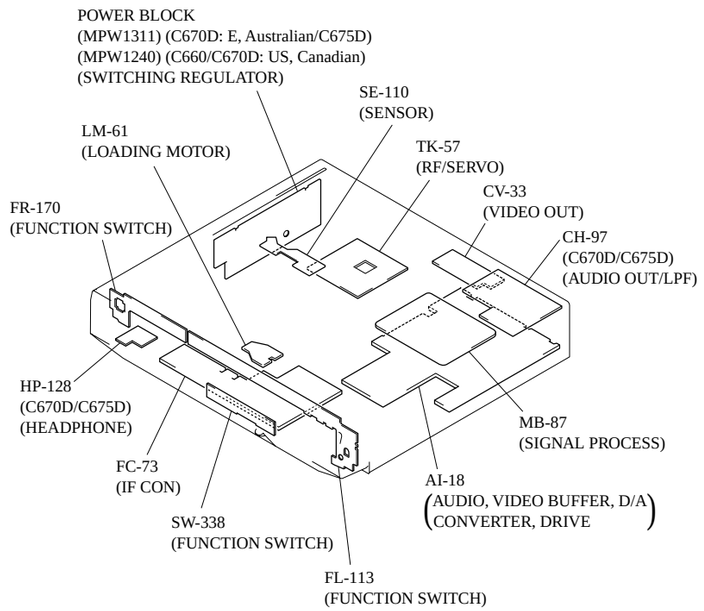
There are few cases that the part isn't mounted in this model is printed on this diagram.

MPW1240 BOARD

CN1	A-6
CN101	B-1
D4	B-3
D5	B-3
D6	A-3
D7	B-3
D11	B-4
D12	B-4
D13	A-4
D14	B-4
D21	B-3
D22	B-4
D101	A-2
D102	B-1
D103	A-2
D104	A-2
D110	A-1
D205	B-2
D301	A-2
D302	A-2
D401	A-2
D402	A-1
D404	A-1
D410	A-1
Q1	A-4
Q2	B-4
Q101	B-2
Q102	A-1
Q103	B-1
Q104	B-1
Q201	B-2
Q301	B-1
Q302	B-2
Q303	B-2
Q304	B-2
Q401	A-1
Q402	A-1
Q403	A-1
Q404	A-1

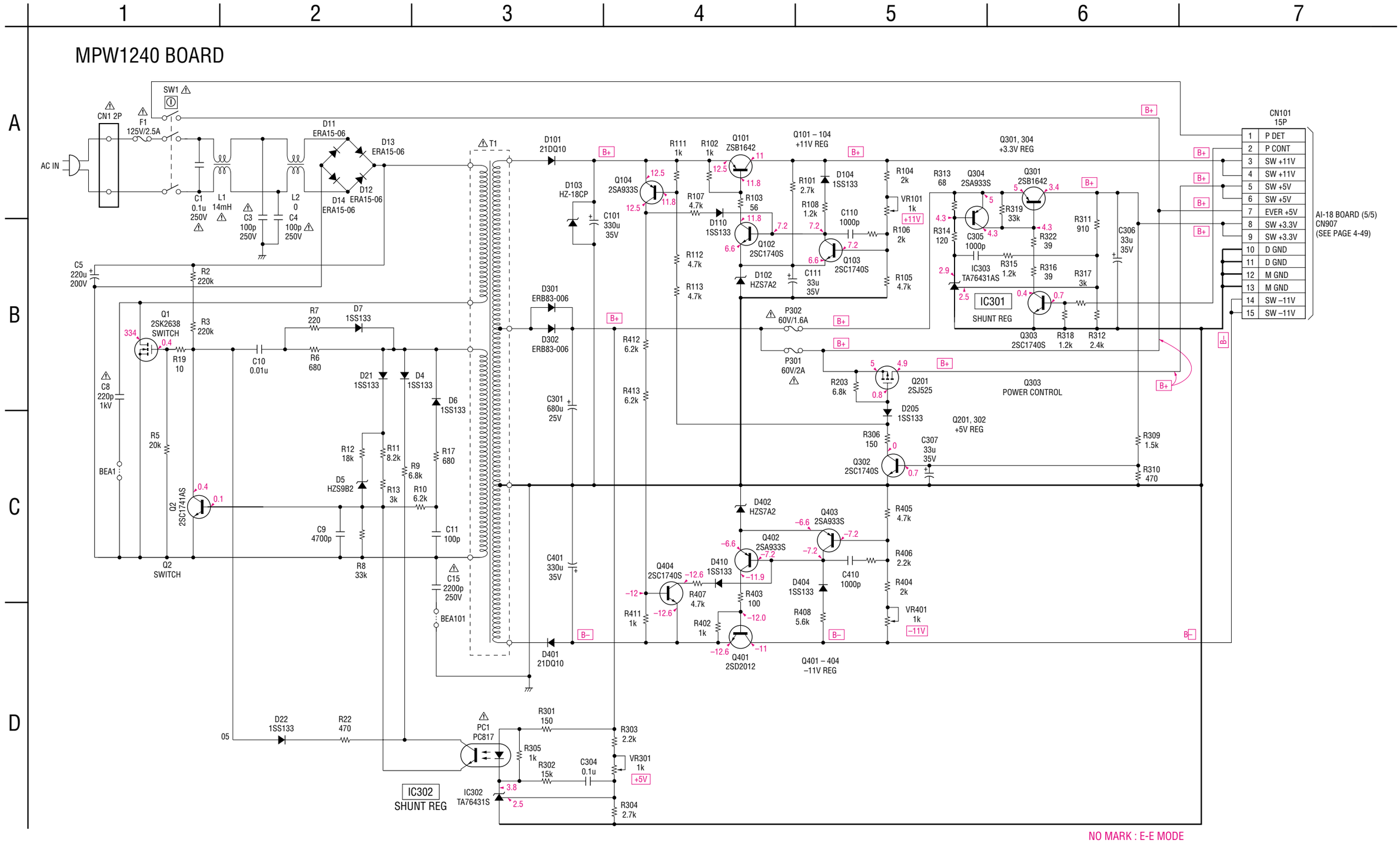
MPW1240 BOARD





MPW1240 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: MPW1240 board; 5,000 series –



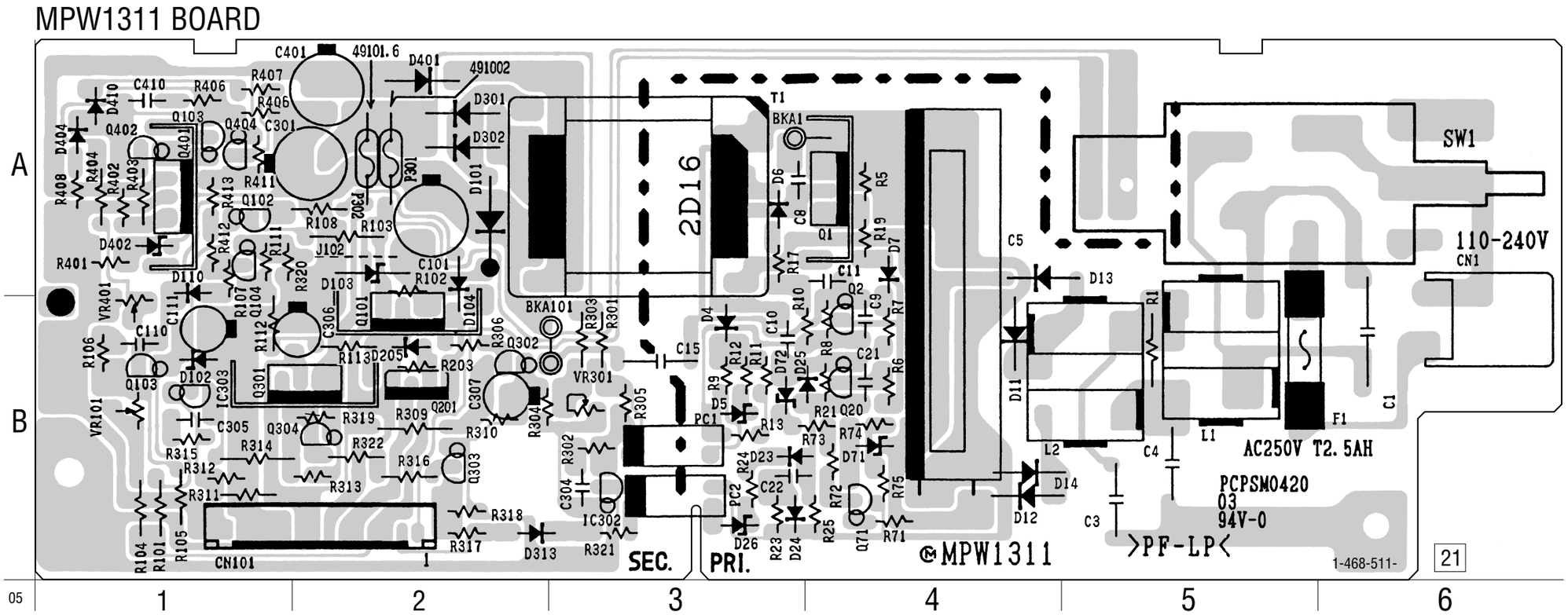
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

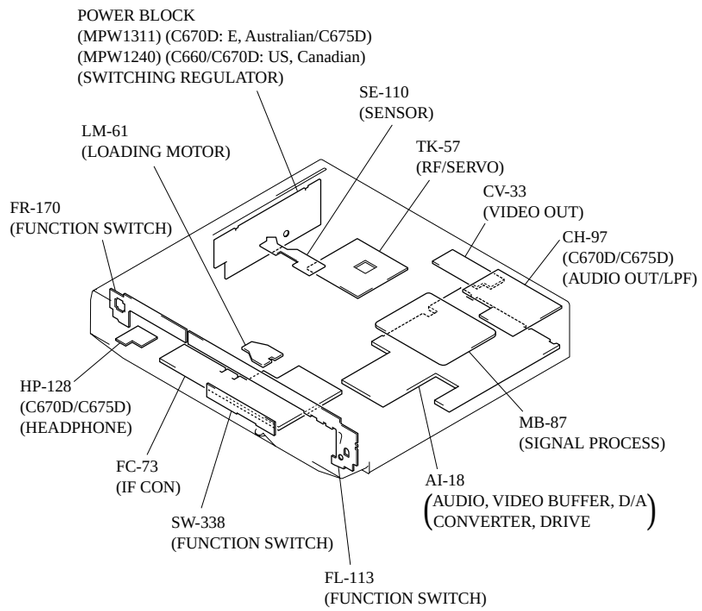
MPW1311 (SWITCHING REGULATOR) PRINTED WIRING BOARD
– Ref. No.: MPW1311 board; 6,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

MPW1311 BOARD

CN1	A-6
CN101	B-1
D4	B-3
D5	B-3
D6	A-3
D7	A-4
D11	B-4
D12	B-4
D13	A-4
D14	B-4
D23	B-3
D24	B-3
D25	B-3
D26	B-3
D71	B-4
D72	B-3
D101	A-2
D102	B-1
D103	A-2
D104	B-2
D110	A-1
D205	B-2
D301	A-2
D302	A-2
D313	B-2
D401	A-2
D402	A-1
D404	A-1
D410	A-1
IC302	B-3
IC303	B-1
Q1	A-4
Q2	B-4
Q20	B-4
Q71	B-4
Q101	B-2
Q102	A-1
Q103	B-1
Q104	A-1
Q201	B-2
Q301	B-1
Q302	B-2
Q303	B-2
Q304	B-2
Q401	A-1
Q402	A-1
Q403	A-1
Q404	A-1

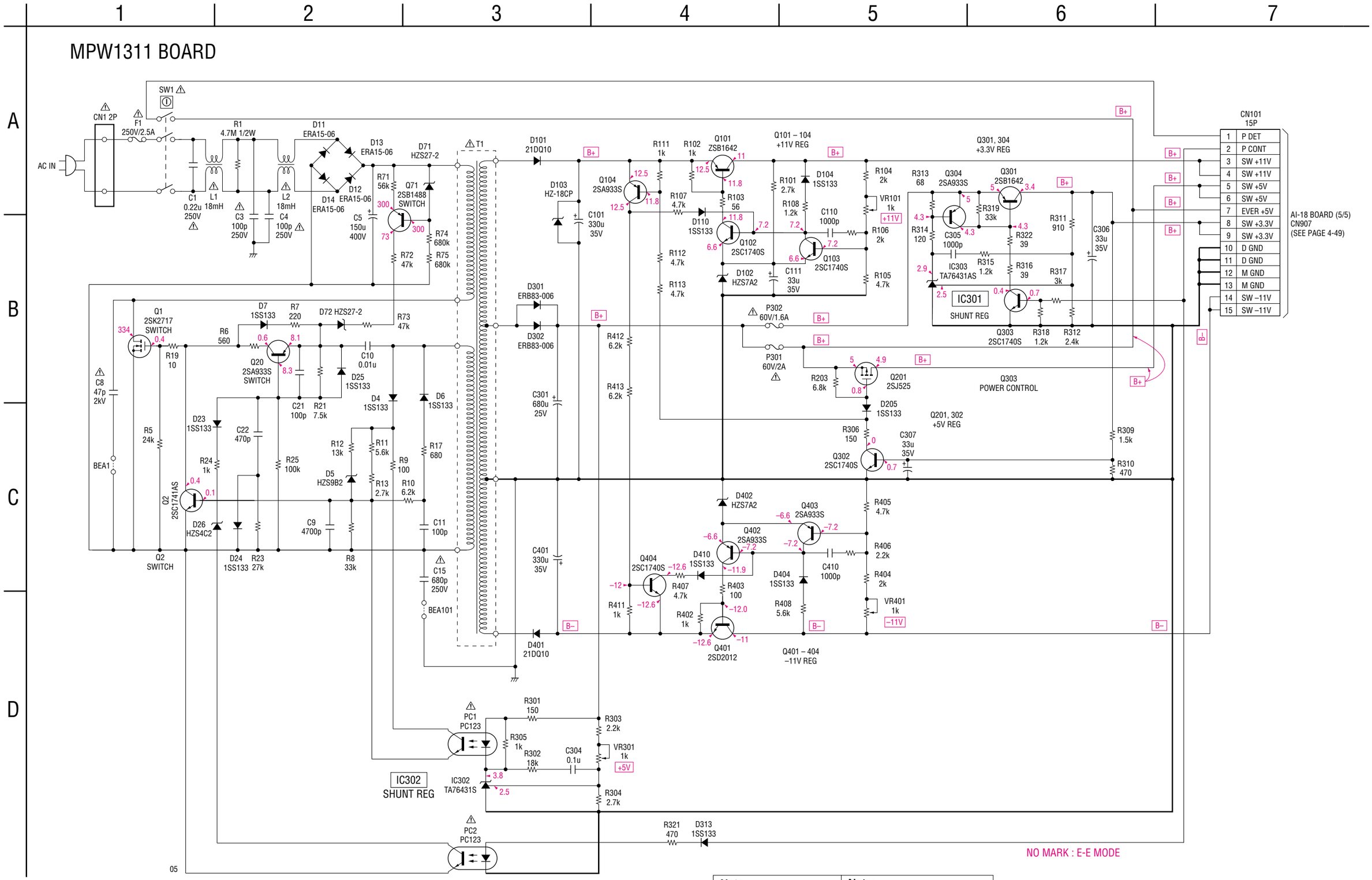




SWITCHING REGULATOR
MPW1311

MPW1311 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: MPW1311 board; 6,000 series –



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. SYSTEM CONTROL PIN FUNCTION (MB-87 BOARD IC102)

Pin No.	Pin name	I/O	Function
1–5	HA17-HA21	O	Address bus A17-A21
6	HA22	–	Not used
7	RGBSEL	O	Color difference signal/RGB signal select signal output
8	DACMUTE/FS	O	Filter control signal output
9	AVCC	–	Power supply
10	AVRH	–	Reference power supply (+3.3 V)
11	AVSS	–	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	XRST	O	System reset signal output
17	OEB	–	Not used
18	CS6	O	Chip select signal for servo DSP
19	NC	–	Not used
20	EUROV/Y	O	EURO V/Y select signal output
21	DISCEXT	O	Line input select signal output (DISC: “H”, EXT: “ L”)
22	ARPRST	O	Reset signal output for ARP
23	DRVMUTE	O	Drive mute signal output
24	VCC	–	Power supply
25	INT0	I	Input of interrupt from AV DEC
26	INT1	I	Input of interrupt from ARP
27	INT2	I	Input of interrupt from FGA
28	INT3	I	Input of interrupt from EEPROM
29	INT4	I	Input of interrupt from IF CON
30	CKSW2/OTASUKE/INT5	I	Input of interrupt from audio DSP
31	CLAPBSY/INT6	I	Input of interrupt from audio DSP
32	INT7	I	Input of interrupt from servo DSP
33	SI0	I	Serial data input from IF CON and EEPROM
34	VSS	–	Ground
35	SO0	O	Serial data output to IF CON and EEPROM
36	SC0	O	Serial clock output to IF CON and EEPROM
37	SI1	I	Serial bus 1 (for data input)
38	SO1	O	Serial bus 1 (for data output)

Pin No.	Pin name	I/O	Function
39	SC1	O	Serial clock output
40	SI2	I	Serial bus 2 (for data input)
41	SO2	O	Serial bus 2 (for data output)
42	YUVRGB/CLAPSW1	O	Mute signal output to video buffer and EURO C/R select signal output
43	DREQ0	I	Input of DMA-REQ 0 from AV DEC
44	DACK0	O	Output of DMA-ACK 0 to AV DEC
45	IFCS	O	Chip select signal to IF CON
46	DREQ1	I	Input of DMA-REQ 1 from AV DEC
47	DACK1	O	Output of DMA-ACK 1 to AV DEC
48	EWC	O	Write control signal output to EEPROM
49	ECS	O	Chip select signal output to EEPROM
50	KCS/39CS	O	Chip select signal output to audio DSP
51	AURST	O	Reset signal output to audio DAC
52	VSS	–	Ground
53	X1	O	Clock output (12.5 MHz)
54	X0	I	Clock input (12.5 MHz)
55	VCC	–	Power supply
56	NC	–	Not used
57	NC	–	Not used
58	NC	–	Not used
59	DACCS0	O	Chip select signal output to DAC (2ch)
60	DACCS1	O	Chip select signal output to DAC (6ch) and DSP
61	48/44.1K	O	PLL FS control signal output
62	MAMUTE	O	Audio mute signal output
63	WIDE	O	WIDE select signal output
64	C	–	Capacitor (0.1uF) connect between ground
65	CS0X	O	External ROM chip select signal output
66	CS1X	–	Not used
67	CS2X	O	Chip select signal output (for AV DEC)
68	CS3X	O	Chip select signal output (for AV DEC)
69	CS4X	O	Chip select signal output (for ARP)
70	CS5X	O	Chip select signal output (for FGA)

Pin No.	Pin name	I/O	Function
71	CPUCK	O	CPU clock signal output
72	NMIX	–	Not used (fixed at “H”)
73	HSTX	–	Not used (fixed at “H”)
74	FRRSTIN	I	Reset signal input from IF CON
75	VSS	–	Ground
76	MD0	I	Input of mode select 0 (fixed at “1”)
77	MD1	–	Ground
78	MD2	–	Ground
79	XWAIT	I	Wait signal input
80	BGRNTX	–	Test terminal (fixed at “H”)
81	BRQ	–	Test terminal (fixed at “L”)
82	RD	O	Read enable signal output
83	WRH	O	High byte write enable signal output (16 bit and 8 bit)
84	NC	–	Not used
85–92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93–100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	–	Ground
102–109	HA0-HA7	O	Address bus A00-A07
110	VCC	–	Power supply
111–118	HA8-HA15	O	Address bus A08-A15
119	VSS	–	Ground
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press [TITLE], [CLEAR], [POWER] buttons on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the POWER button.

```
         Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
                Exit: Power Key
_
Model    : DPX13xxxx
Revision   : 1.xxxx
```

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
          Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit
Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All
All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

        Diag All Check
         No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx



Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [NEXT] key to go to the next item, or [PREV] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [STOP] or [ENTER] key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###




 3-2. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [STOP] key to quit the diagnosis, or [PREV] key to repeat the same item where an error occurred, or [NEXT] key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if “5. Supply” is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
          Check Menu
        No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit
Quit the submenu and return to the main menu.

1. All

All submenu items continuous check
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC104) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
The data are added of ROM (IC104) and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code is displayed with 2-digit hexadecimal number.

	Model Type	
DVP-C660 (US/CND)	4	0
DVP-C670D (US/CND), DVP-C675D (PX)	5	0
DVP-C670D (E)	5	2
DVP-C670D (AUS)	5	A

• Abbreviation
CND: Canadian AUS: Australia

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.
US, Canadian and PX models: 01
Australian and E models : 04

3. Peripheral

(3-2) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-3) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord

(3-4) NAND Flash Check
Data clear → write → read, and accord check
Error 04: Clear error
05: Write error
06: Read data discord
21: Faulty blocks exceed 10
The data clear, write, read, and check are executed to the block 0 of Flash memory (IC802).
In case of a faulty block, its address is displayed.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.

5. Supply

Caution: Do not conduct this check with a mechanical deck connected.
An access is made to the stream supply and servo control IC (IC302) and external RAM (IC303) using check data. If mechanical deck is connected, the motor and optics could be damaged. This check is also executed by the "All" menu item.

Supplement: How to disconnect mechanical deck
Disconnect flexible flat cables connected to the CN404 and CN405 of MB-87 board.

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP → RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###




 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM
Data write → read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC104) are copied to all areas of RAM (IC504, IC505) connected to the AVD (IC502) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

(6-3) 1930 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC104) are transferred to the RAM (IC504, IC505) in AVD (IC502), and output as video signals from the AVD (IC502).
They are output from all video terminals (Composite, Y/C, Component).

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component)

8. Audio

(8-2) ARP → 1930
Error 14 : ARP → 1930 video NG
15 : ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC502) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
All channels → 2ch Left → 2ch Right → Front Left → Front Right → Rear Left → Rear Right → Center → Sub Woofer are checked in this order.
Caution: Sub Woofer is checked only for low-frequency components, and no sound will be heard unless a proper super woofer is connected.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) EEPROM Check
(3-3) Gate Array Check
(3-4) NAND Flash Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone

Error Codes List
00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1939 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
  ## Drive Auto Adjustment ##

        Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. SACD



                  Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer), and SACD in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen.
The disc used for adjustment must be the one specified for adjustment. However, for SACD disc, use the player with initial data if the disc is not available.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key, and the servo set data in EEPROM will be initialized. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. SACD disc are adjusted in this order. Each time one disc was adjusted, it is ejected. Replace it with the specified disc following the message. Though the message to confirm whether discs other than SACD disc are adjusted is not displayed, you can finish the adjustment if pressing the [STOP] button. The S curve level, RF level, and jitter value can be confirmed during adjustment, and if OK, press the [ENTER] key and continue adjustment. (If NG, press the [STOP] button) During adjustment of each disc, the measurement for disc type judgment is made. As automatic adjustment does not judge the disc type unlike conventional models, take care not to insert wrong type discs. Also, do not give a shock during adjustment.

1. DVD-SL (single layer)

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps
1. SLED TILT Reset
2. Disc Check Memory SL
3. Wait 500 msec
4. Set Disc Type SL
5. LD ON
6. Spdl Start
7. Wait 1 sec
8. Focus Search ON
9. Focus Search OFF
10. Focus Servo ON 1
11. Auto Track Offset Adjust
12. Tracking ON
13. CLVA ON
14. Wait 1 sec
15. Sled ON
16. Check CLV Lock
17. Auto LFO Adjust
18. Auto Focus Offset Adjust
19. Auto Tilt Position Adjust
20. Auto Focus Gain Adjust
21. Auto Focus Offset Adjust
22. EQ Boost Adjust
23. Auto LFO Adjust
24. Auto Track Gain Adjust
25. All Servo Stop
26. Eep Copy Loop Filter Offset

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Rest
2. Disc Check Memory CD
3. Wait 500 msec
4. Set Disc Type CD
5. LD ON
6. Spdl Start
7. Wait 1 sec
8. Focus Search ON
9. Focus Search OFF
10. Focus Servo ON 1
11. Auto Track Offset Adjust
12. Tracking ON
13. (TC Display Start)
14. CLVA ON
15. Wait 1 sec
16. Jitter Display Start
17. Sled ON
18. Check CLV ON
19. Auto LFO Adjust
20. Auto Focus Offset Adjust
21. Auto Focus Gain Adjust
22. Auto Focus Offset Adjust
23. Eq Boost Adjust
24. Auto LFO Adjust
25. Auto Track Gain Adjust
26. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Wait 500 msec
4. Set Disc Type DL
5. LD ON
6. Spdl Start
7. Wait 1 sec
   Layer 1 Adjust
8. Focus Servo ON 1
9. Auto Track Offset Adjust
10. Tracking ON
11. Clva ON
12. Wait 1 sec
13. Sled ON
14. Check CLV Lock
15. Auto Loop Filter Offset Adjust
16. Auto Focus Offset Adjust
17. Auto Focus Gain Adjust
18. Auto Focus Offset Adjust
19. Eq Boost Adjust
20. Auto Loop Filter Offset
21. Auto Track Gain Adjust
    Layer 0 Adjust
22. Fj (L1 → L0)
23. Auto Track Offset Adjust L0
24. Tracking ON
25. Clva ON
26. Wait 1 sec
27. Sled ON
28. Check CLV Lock
29. Auto Loop Filter Offset Adjust
30. Auto Focus Offset Adjust
31. Auto Focus Gain Adjust
32. Auto Focus Offset Adjust
33. Eq Boost Adjust
34. Auto Loop Filter Offset
35. Auto Track Gain Adjust
36. All Servo Stop

4. SACD

Select [4], insert SACD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. However, if SACD disc is not available, use the player with initial data, skipping the SACD adjustment. In this case, you can finish the adjustment if pressing the [STOP] button.

SACD Adjustment Steps

1. Sled Tilt Reset
2. Set Disc Type CD
3. LD ON
4. Spdl Start
5. Wait 1 sec
6. Focus Servo ON 0
7. Auto track Offset Adjust
8. Tracking ON
9. CLVA ON
10. Wait 1 sec
11. Sled ON
12. Check CLV ON
13. Auto LFO Adjust
14. Auto Focus Offset Adjust
15. Auto Focus Gain Adjust
16. Auto Focus Offset Adjust
17. Eq Boost Adjust
18. Auto LFO Adjust
19. Auto Track Gain Adjust
20. All Servo Stop

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

         Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                  Exit: Return
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform “Reset SLED TILT” by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER]	Power OFF
[STOP]	Servo stop
[OPEN/CLOSE]	Stop+Eject/Loading
[RETURN]	Return to Operation Menu or Test Mode Menu
[NEXT], [PREV]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
          Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check



0. Reset SLED TILT
```

On this screen, the mirror time is measured to judge the disc and it is written to the EEPROM. First load DVD SL disc and press [1], next load CD disc and press [2], and finally load DVD DL disc and press [3].
The adjustment must be executed more than once after default data were written. External vibration or shock to the player must not be given. Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F.
Check that the value of CD is larger than that of DVD.
When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
          Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
                        EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry “Disc Check Memory”. Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
          Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
       SA._____ SI.___ EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
          Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
       TC.___:___:___ EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

[0] Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1] Disk Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
          Servo Control
1. LD         Off R.Sled FWD
2. SP         Off L.Sled REV
3. Focus      Off U.Tilt Up
4. TRK.       Off D.Tilt Down
5. Sled       Off
6. CLVA       Off
7. FCS. Srch Off



0. Reset SLED TILT
       SA._____ SI.___ EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0	Reset SLED TILT	Reset the Sled and Tilt to initial position.
1	LD	Turn ON/OFF the laser.
2	SP	Turn ON/OFF the spindle.
3	Focus	Search the focus and turn on the focus.
4	TRK	Turn ON/OFF the tracking servo.
5	Sled	Turn ON/OFF the sled servo.
6	CLVA	Turn ON/OFF normal servo of spindle servo.
7	FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→	Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
←	Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.
↑	Tilt UP	Move the tilt upward.
↓	Tilt DOWN	Move the tilt downward.

The following menus are normally not used.

3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment

The persons who do not know well about these menus should not use them.

6. Memory Check

```
EEPROM DATA              -- DL --
             CD SACD   SL  L0  L1
Focus Gain    xx xx    xx  xx  xx
TRK. Gain     xx xx    xx  xx  xx
Focus Offset  xx xx    xx  xx  xx
TRK. Offset   xx xx    xx  xx  xx
L. F. Offset  xx xx    xx  xx  xx
Analog FRSW   xx xx    xx  xx  xx
PLL DAC Gain  xx xx    xx  xx  xx
EQ Boost      xx xx    xx  xx  xx
Jitter        xx xx    xx  xx  xx
Mirror Time   xx       xx  xx
_            CLEAR: Default Set
```

This screen displays current servo adjusted data stored in the EEPROM. Though adjusted data can be initialized with the CLEAR key, they cannot be restored after initialization.
So, before clearing, make a note of the adjusted data.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING

```
      ### Mecha Aging ###



Press OPEN key



Abort: STOP key
```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9  Scroll: UP/DOWN
(1: Last EMG.)  Exit: Return
```

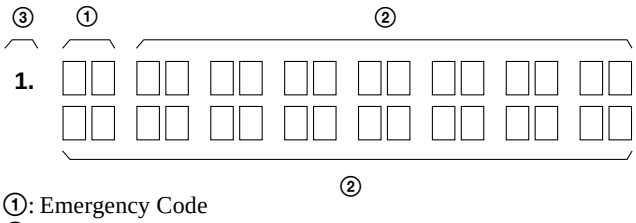
On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours
◎ Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history
◎ Press TITLE and CLEAR keys in this order.
Initializing set up data
◎ Press DVD and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



①: Emergency Code
②: Don't Care
These codes are used for verification of software designing.
③: Historical order 1 to 9

Emergency Codes List

10: Communication to IC201 (MB-86 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC101 (MB-86 board) failed.
13: Writing of hours meter data to EEPROM, IC101 (MB-86 board) failed.
14: Communication to Servo DSP IC404 (MB-86 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.
50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

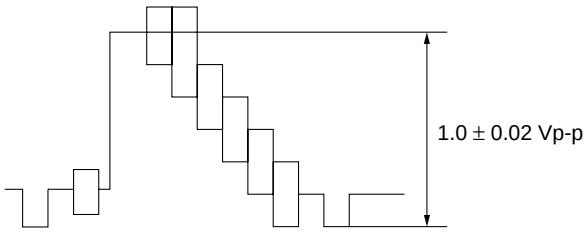
```
   ## Version Information ##

IF con.    Ver. x. xxx (xxxx)
           Group    00

SYScon.    Ver. x. xxx (xxxx)
           Model    xx
           Region   0x
Servo DSP. Ver. 1. xxxx


Exit: RETURN
```

On the Test Mode Menu screen, selecting [5] displays the ROM version and region code.
The parenthesized hexadecimal number in version field is checksum value of ROM.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV501 on MB-86 board
Specified value : 1.0 ± 0.02 Vp-p



6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. FC-73 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following thecommands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remocon receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +5 V (PCONT) of MB-87 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

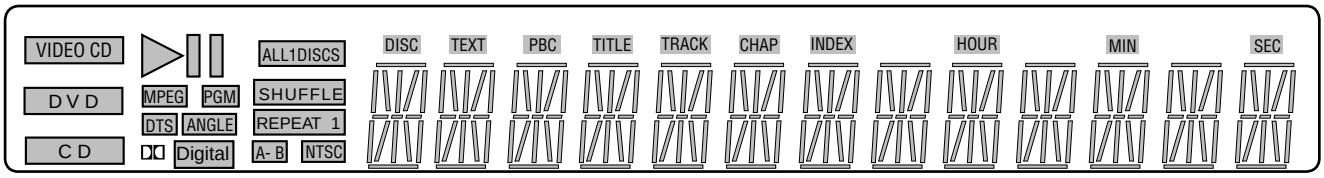
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON was reset, the input to 26pin is judged and if “Low” is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-87 board is not connected). While pressing the [STOP] key on the main unit with the IF CON in STANDBY mode, enter [RETURN] → [DISPLAY] (or [SET UP]) on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

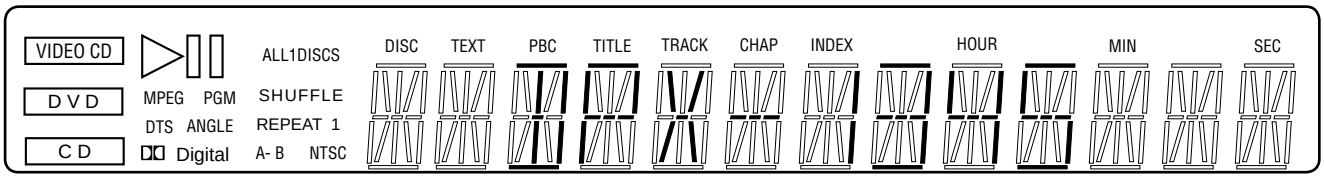
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

(1) FLD and LED all ON (for 5 seconds)



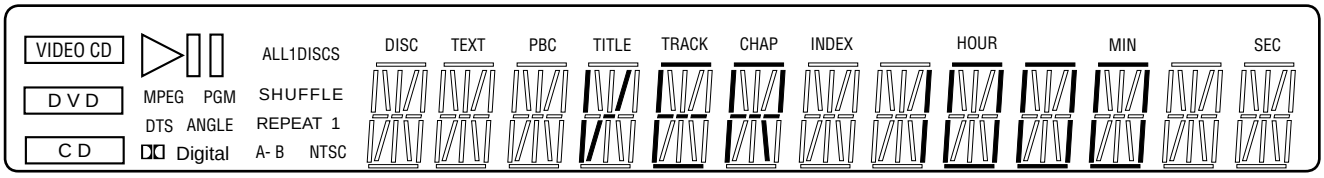
(2) MODEL display (for 2 seconds)



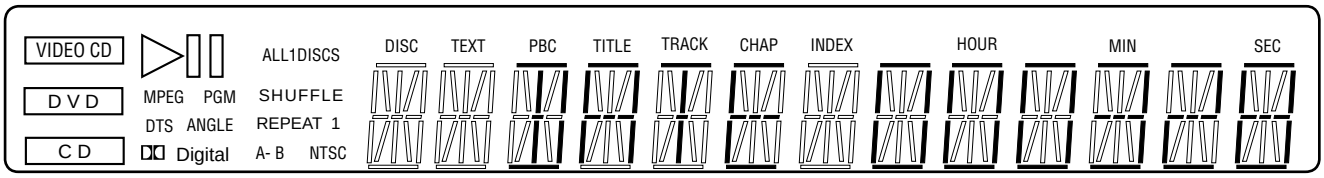
If MODEL is judged as Step UP-DD

Contents of display
"DPX-1345" Basic & DD

(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Basic, Entry-DD

Input Voltage [V]	IC401: Pin No. (Signal)						
	Pin ③ (AN3)	Pin ② (AN4)	Pin ① (AN5)	Pin ⑲ (AN7)	Pin ④ (AN2)	Pin ⑤ (AN1)	Pin ⑳ (AN6)
0	STOP	DISPLAY	LEFT	RETURN	DISC 5	Virtual 3D surround	1/ALL
1	PAUSE	DISC SKIP	DOWN	DVD MENU	DISC 4	* DVE	REPEAT
2	NEXT	EXCHANGE	ENTER	TITLE	DISC 3	* Virtual 3D Head Phone	SHUFFLE
3	PREV	MEGA CONTROL	UP		DISC 2		
4			RIGHT		DISC 1		
5							

* except DVP-C660

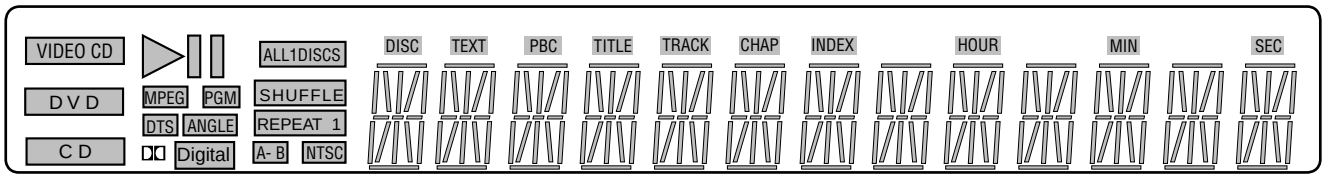
2-3-1. FLD and LED All ON

2-3-1-1. Transition Keys in Self Check Mode

- [STOP] key and [PLAY] key on the main unit
- [LEFT] key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.
Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

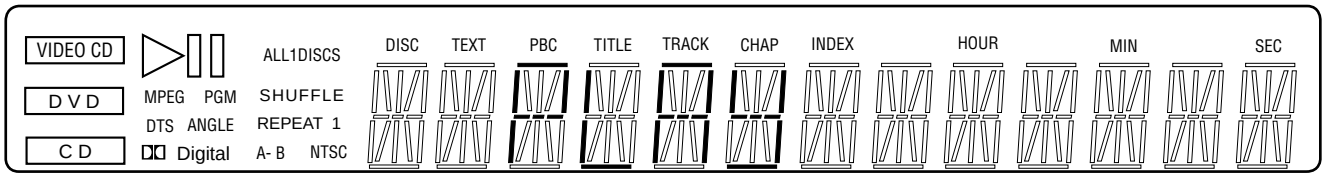
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

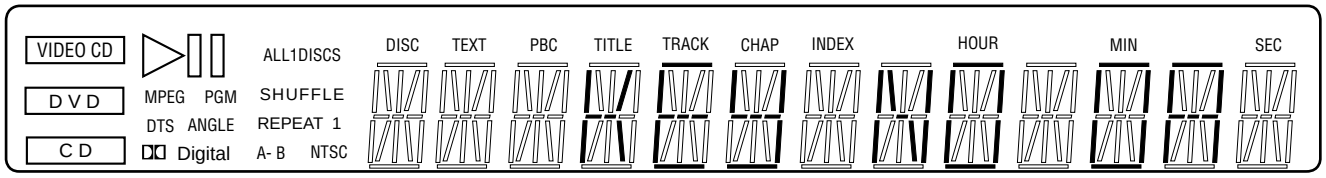
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

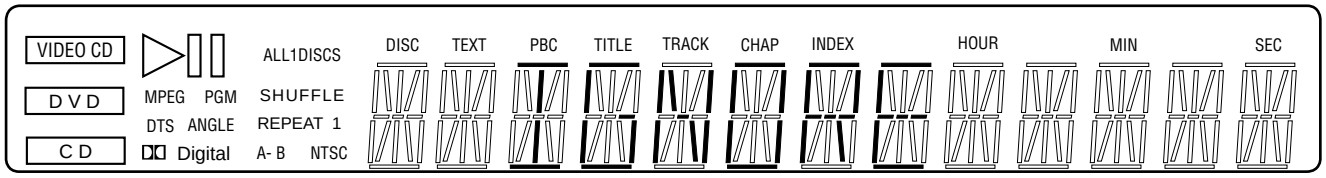
FLD display (at input of [PLAY] key on the main unit)



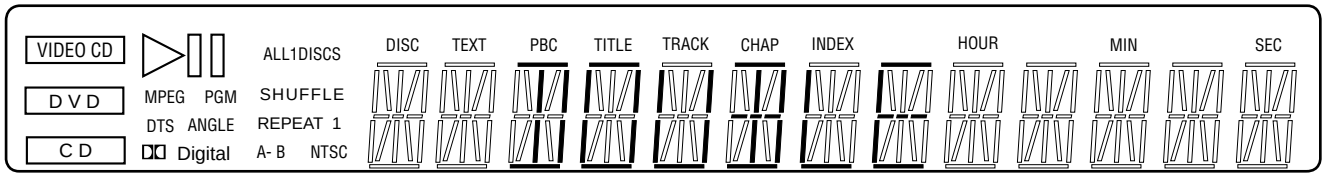
Key code display (at input of PLAY key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed



2-3-3. Remote Commander Key Name Display and Key Code Display

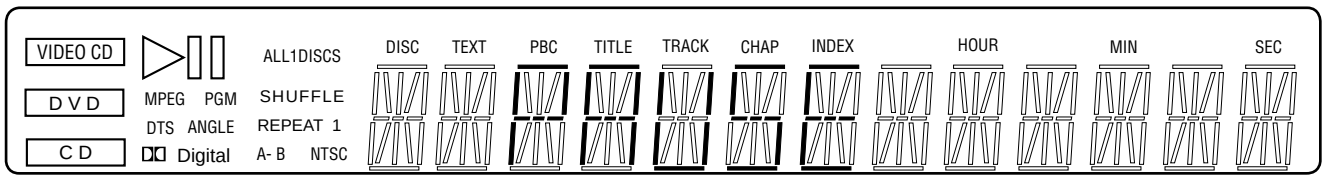
2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

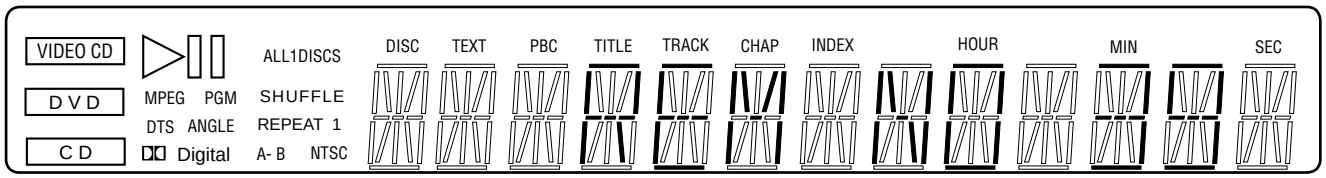
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of PAUSE key)



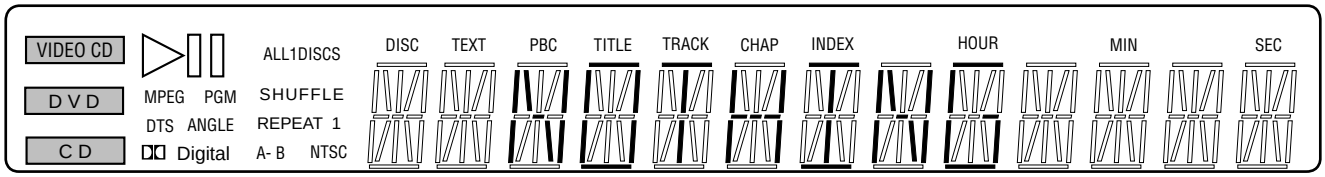
Remote commander key code display (at input of PAUSE key, Key code: 39h)



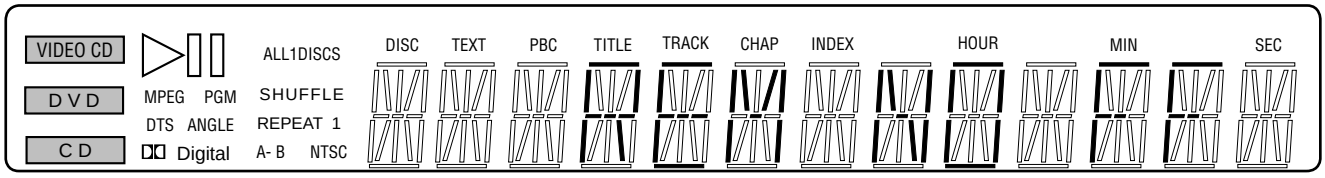
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

Communication error display (at no key input)



Communication error display (at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

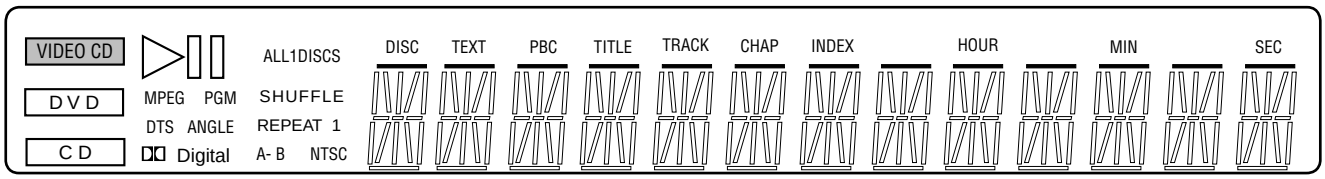
2-3-5-1. Transition Keys in Self Check Mode

- RIGHT on the main unit and the remote commander
- SHUTTLE on the main unit and the remote commander during Anode Test display

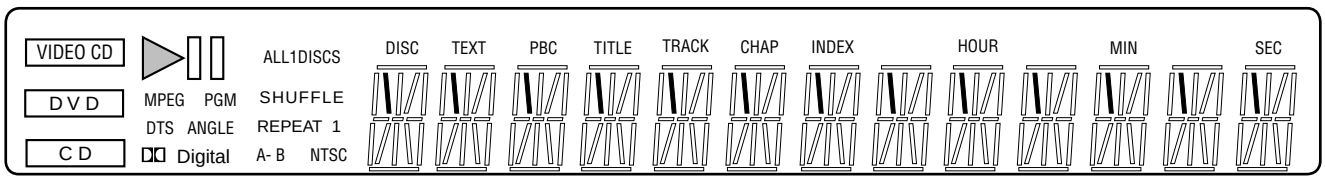
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when RIGHT key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in $1 \rightarrow 2 \rightarrow 3$ direction, or counterclockwise it switches in $3 \rightarrow 2 \rightarrow 1$ direction. This tests whether each segment turns on individually. Also, if the main unit does not have the JOG/SHUTTLE, use the remote commander JOG/SHUTTLE to switch over the segment display position.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

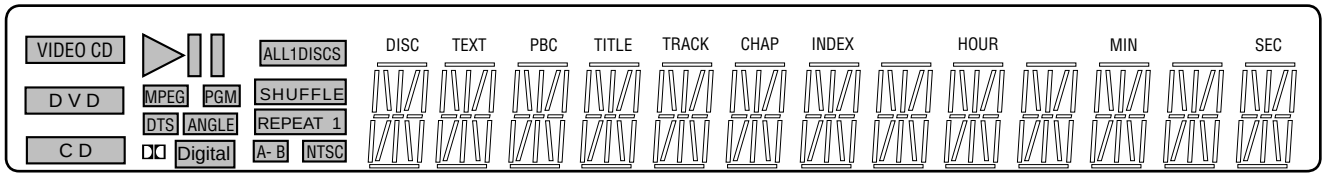
2-3-6-1. Transition Keys in Self Check Mode

- UP on the main unit and the remote commander
- SHUTTLE on the main unit and the remote commander during Grid Test display

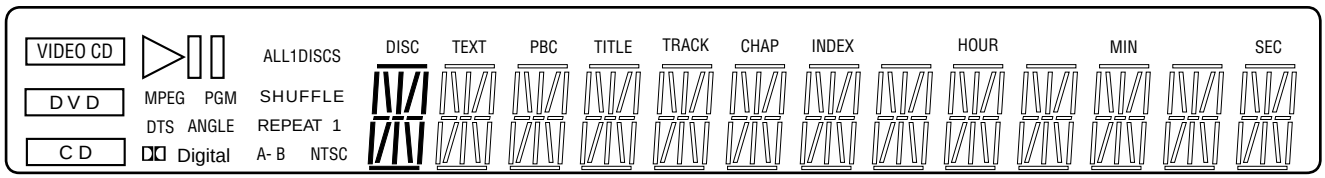
2-3-6-2. Operation and Display

The Self Check mode transits to this mode when UP key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test



↓ (Input in CW direction)



2-3-7. LED Test Display

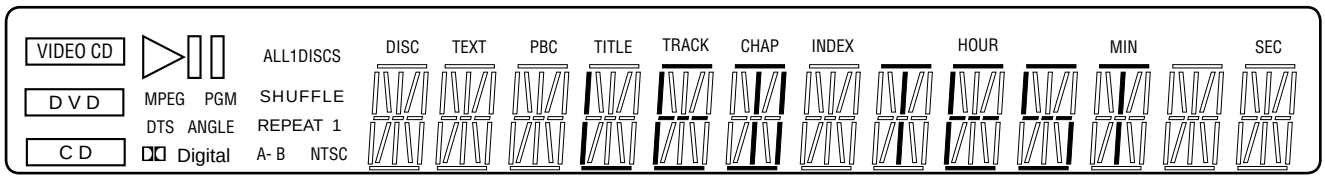
2-3-7-1. Transition Keys in Self Check Mode

- DOWN on the main unit and the remote commander
- SHUTTLE on the main unit and the remote commander during LED Test display

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned. For the MULTI LED only, there is no key which switches that function, and therefore use the RETURN key on the main unit.

FLD display during LED Test



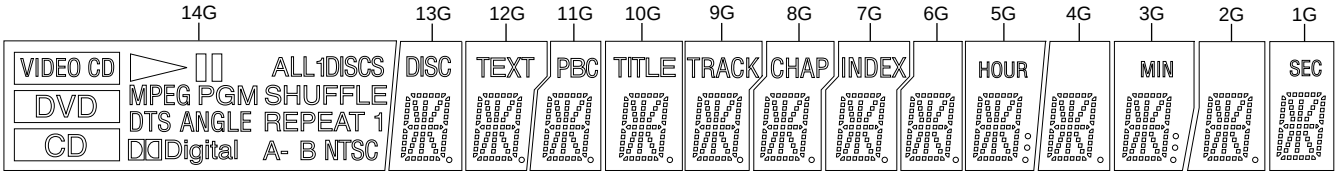
2-3-8. Beep Sound Test

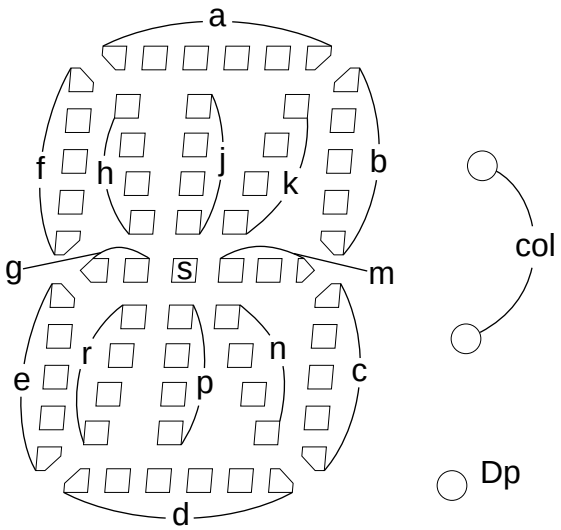
2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 2kHz (100ms) is generated.





(13G~1G)

ANODE CONNECTION

	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	VIDEO CD	a	a	a	a	a	a	a	a	a	a	a	a	a
P2	▷	h	h	h	h	h	h	h	h	h	h	h	h	h
P3	▯▯	j	j	j	j	j	j	j	j	j	j	j	j	j
P4	ALL	k	k	k	k	k	k	k	k	k	k	k	k	k
P5	(ALL) 1	b	b	b	b	b	b	b	b	b	b	b	b	b
P6	DISC	f	f	f	f	f	f	f	f	f	f	f	f	f
P7	S	m	m	m	m	m	m	m	m	m	m	m	m	m
P8	DVD	s	s	s	s	s	s	s	s	s	s	s	s	s
P9	MPEG	g	g	g	g	g	g	g	g	g	g	g	g	g
P10	PGM	e	e	e	e	e	e	e	e	e	e	e	e	e
P11	SHUFFLE	n	n	n	n	n	n	n	n	n	n	n	n	n
P12	DTS	p	p	p	p	p	p	p	p	p	p	p	p	p
P13	ANGLE	r	r	r	r	r	r	r	r	r	r	r	r	r
P14	REPEAT	c	c	c	c	c	c	c	c	c	c	c	c	c
P15	(REPEAT) 1	d	d	d	d	d	d	d	d	d	d	d	d	d
P16	NTSC	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	-
P17	B	-	-	-	-	-	-	-	-	col	-	col	-	-
P18	A-	DISC	TEXT	PBC	TITLE	TRACK	CHAP	INDEX	-	HOUR	-	MIN	-	SEC
P19	Digital	-	-	-	-	-	-		-	-	-	-	-	-
P20	CD	-	-	-	-	-	-	-	-	-	-	-	-	-

3. TROUBLESHOOTING

3-1. Test Mode is not activated

With the set assembled in the front panel, the Test mode does not become active if any button was pressed by any reason.Under this condition, the power is not turned on even in the normal status. (The set is kept in Standby status = Red LED is kept on) Not only the buttons are inactive, but also a signal from remote commander is not accepted. To check this condition, with the self check port (pin ㉖ of IF CON) kept in “Low” status, supply the AC power, so that the Test mode is forcibly activated. On the board, short the lands where SELF is printed. The IF CON checks the self check port only after the power on reset (only when AC is supplied; not in Standby status). If any button was pressed, the button name should be displayed on the FL display tube. Though no button is pressed this time, display of other than NOTHING implies that the button was pressed.

3-2. Power is not turned on

① Red (STANDBY) LED does not light up when AC was supplied. The power (PDET=5 V) is not supplied.
X401 is oscillating.

② Red (STANDBY) LED is kept on though POWER button was pressed. Any button is kept pressed.
PONCHK (IF CON pin ⑥) is over 0.1 V.

③ Green LED lights up when POWER button was pressed, but red LED lights up again after several seconds. PONCHK (IF CON pin ⑥) is abnormal. (Slow rise time from 0.1 V to 2.5 V. Voltage must be less than 2.5 V)
SYSTEM CONTROL does not operate normally.

3-3. Power is turned on and off repeatedly

EVER 5 V may not be supplied normaly. Check that P301 (MPW1240/MPW1311) is not broken.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D119A/D121A/D120O)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer)
   HLX-503 (J-6090-069-A) (single layer)
   HLX-504 (J-6090-088-A) (single layer)
   HLX-505 (J-6090-089-A) (dual layer)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
   Extension cable (J-6090-102-A)

7-1. POWER SUPPLY ADJUSTMENT

1. Power Supply Check (MPW1240, MPW1311 BOARD)

Mode	E-E
Instrument	Digital voltmeter
SW +5 V Check	
Test point	CN101 pin ⑤, ⑥
Specification	5.0 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN101 pin ⑧, ⑨
Specification	3.3 ± 0.2 Vdc
EVER+5 V Check	
Test point	CN101 pin ⑦
Specification	5.3 ± 0.3 Vdc
SW +11 V Check	
Test point	CN101 pin ③, ④
Specification	$11.0\ ^{+1.0}_{-1.5}$ Vdc
SW –11 V Check	
Test point	CN101 pin ⑭, ⑮
Specification	$-11.0\ ^{+1.5}_{-1.0}$ Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

2. +11 V Adjustment (MPW1240/PWB1311 BOARD)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ③, ④
Adjusting Element	VR101
Specified Value	$11.0\ ^{+1.0}_{-1.5}$ V

3. –11 V Adjustment (MPW1240/PWB1311 BOARD)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ⑭, ⑮
Adjusting Element	VR401
Specified Value	$-11.0\ ^{+1.5}_{-1.0}$ V

4. EVER +5 V Adjustment (MPW1240/PWB1311 BOARD)

Mode	PB
Measuring Instrument	Digital voltmeter
Measurement Point	CN101 pin ⑦
Adjusting Element	VR301
Specified Value	5.3 ± 0.3 V

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-87 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	1.0 ± 0.02 Vp-p

Adjusting method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain 1.0 ± 0.02 Vp-p.

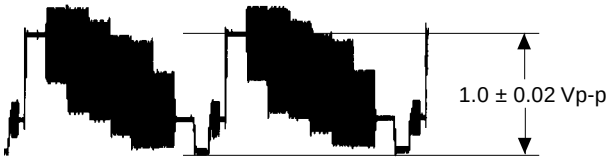


Figure 7-1

2. S-terminal Output Check (MB-87 BOARD)

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.1 Vp-p.

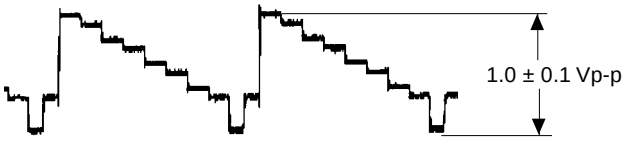


Figure 7-2

3. Checking Component Video Output B-Y (MB-87 BOARD)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (B-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the B-Y level is 700 ± 70 mVp-p.

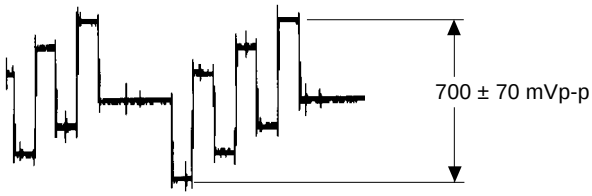


Figure 7-3

4. Checking Component Video Output R-Y (MB-87 BOARD)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (R-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the R-Y level is 700 ± 70 mVp-p.

Figure 7-4

5. Checking Component Video Output Y (MB-87 BOARD)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) Confirm that the Y level is 1.0 ± 0.1 Vp-p.

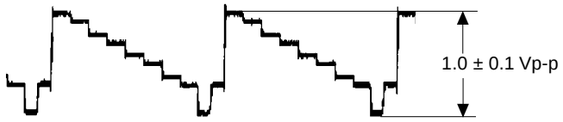


Figure 7-5

6. Checking S Video Output S-C (MB-87 BOARD)

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	286 ± 50 mVp-p (NTSC) 300 ± 100 mVp-p (PAL)

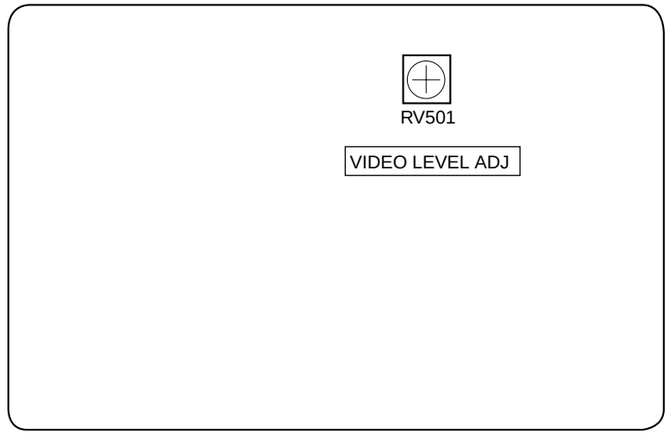
Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is 300 ± 100 mVp-p.

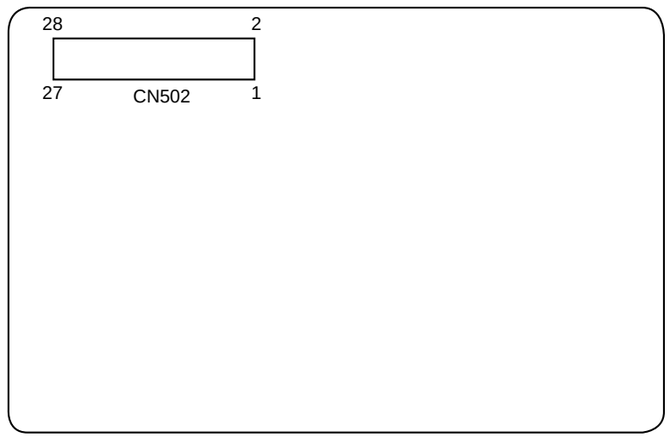
Figure 7-6

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

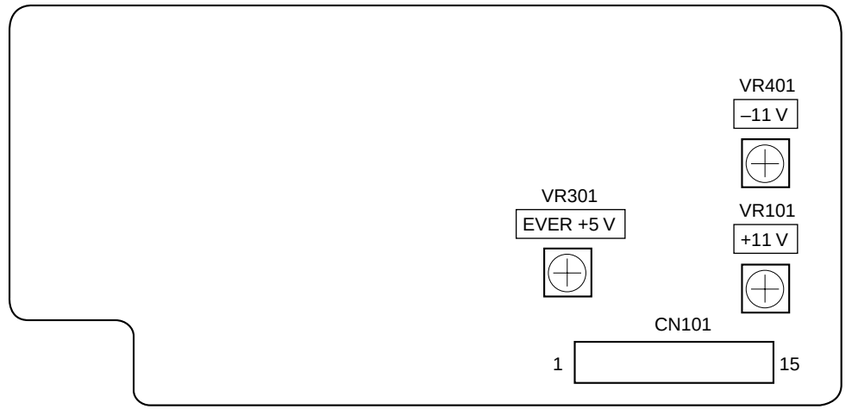
MB-87 BOARD (SIDE A)



MB-87 BOARD (SIDE B)



MPW1240/MPW1311 BOARD (COMPONENT SIDE)



SECTION 8
REPAIR PARTS LIST

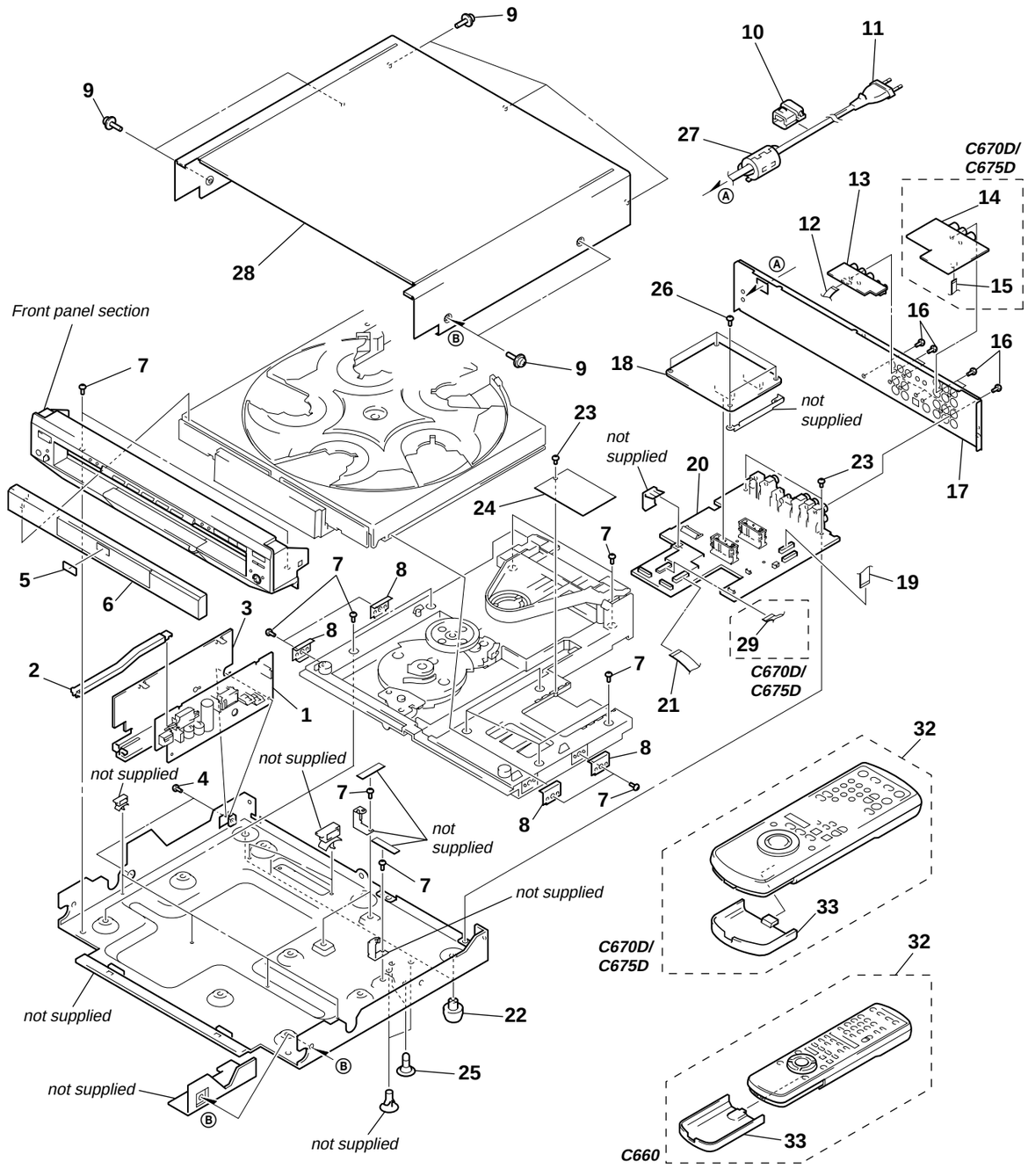
8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  AUS: Australian
  CND: Canadian

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

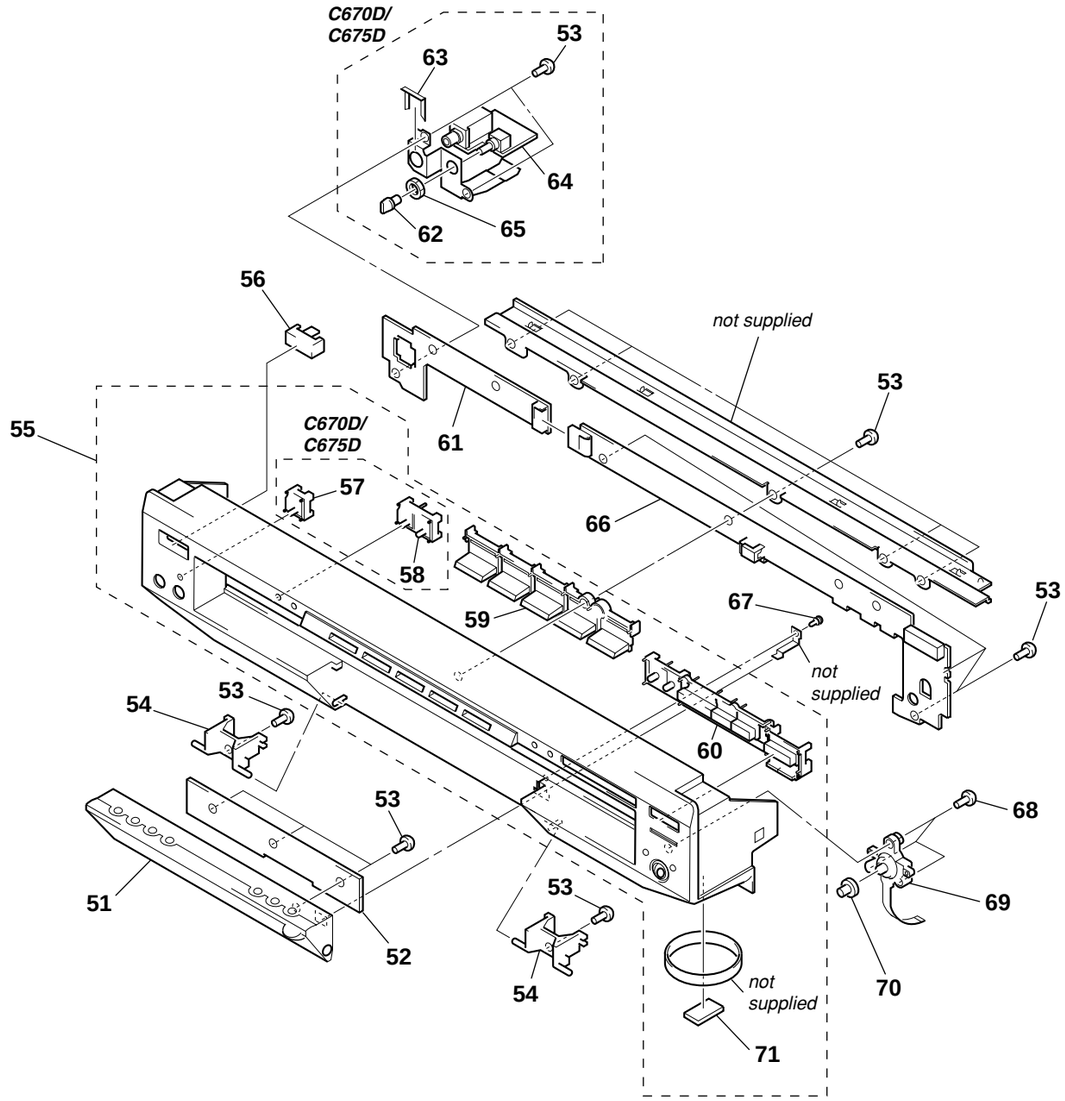
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN ASSEMBLY



Ref. No.	Part No.	Description	Remark
* 1	1-468-511-11	POWER BLOCK (MPW1240)	(C660/C670D: US, CND)
* 1	1-468-511-21	POWER BLOCK (MPW1311)	(C670D: E, AUS/C675D)
2	3-059-271-01	STRIKER, POWER	
3	3-061-954-01	COVER, PWB	
4	3-062-340-01	+BV SUMITITE B3 EXT W (3X8)	
5	3-975-726-71	EMBLEM, DVD	
6	X-3950-375-1	COVER ASSY, TRAY (C660)	
6	X-3950-845-1	COVER ASSY, TRAY (C670D/C675D)	
7	3-970-608-11	SUMITITE (B3), +BV	
8	4-957-280-31	BRACKET (GUIDE B1)	
9	3-710-901-41	SCREW, TAPPING	
10	4-966-267-12	BUSHING (FBS001), CORD	
⚠11	1-782-960-11	CORD, POWER (C670D: E/C675D)	
⚠11	1-783-531-31	CORD, POWER (C660/C670D: US, CND)	
⚠11	1-790-588-11	CORD, POWER (C670D: AUS)	
12	1-792-869-11	CABLE, FLEXIBLE FLAT (FAC-003)	
* 13	A-6065-497-A	CV-33 BOARD, COMPLETE	(C660/C670D: E, AUS)
* 13	A-6065-498-A	CV-33 BOARD, COMPLETE	(C670D: US, CND/C675D)
* 14	A-6065-504-A	CH-97 BOARD, COMPLETE	(C670D/C675D)
15	1-792-866-11	CABLE, FLEXIBLE FLAT (FAH-002)	(C670D/C675D)
16	3-970-608-51	SUMITITE (B3), +BV	
17	3-059-275-01	PANEL, REAR (C660)	
17	3-059-275-11	PANEL, REAR (C670D: US, CND/C675D)	
17	3-059-275-21	PANEL, REAR (C670D: E)	
17	3-059-275-31	PANEL, REAR (C670D: AUS)	
* 18	A-6065-488-A	MB-87 BOARD, COMPLETE (C660)	
* 18	A-6065-489-A	MB-87 BOARD, COMPLETE	(C670D: US, CND/C675D)
* 18	A-6065-490-A	MB-87 BOARD, COMPLETE (C670D: E)	
* 18	A-6065-491-A	MB-87 BOARD, COMPLETE (C670D: AUS)	
19	1-792-870-11	CABLE, FLEXIBLE FLAT (FMA-002)	
* 20	A-6065-493-A	AI-18 BOARD, COMPLETE (C660)	
* 20	A-6065-494-A	AI-18 BOARD, COMPLETE	(C670D: US, CND/C675D)
* 20	A-6065-555-A	AI-18 BOARD, COMPLETE (C670D: E, AUS)	
21	1-792-864-11	CABLE, FLEXIBLE FLAT (FAF-001)	
22	3-957-819-01	FOOT	
23	3-970-608-01	SUMITITE (B3), +BV	
24	3-062-118-01	AI COVER	
25	3-051-085-01	SPACER (KGLS-RT), ROCKING CARD	
26	3-055-791-01	SUMITITE (B3) (RING), +BV	
27	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
28	3-059-266-11	CASE, UPPER	
29	1-792-865-11	CABLE, FLEXIBLE FLAT (FAH-001)	(C670D/C675D)
32	1-418-989-61	COMMANDER, STANDARD (RMT-D121A)	(C670D: US, CND, E/C675D)
32	1-418-989-71	COMMANDER, STANDARD (RMT-D121O)	(C670D: AUS)
32	1-418-991-71	COMMANDER, STANDARD (RMT-D119A)	(C660)
33	3-053-633-01	COVER, BATTERY (for RMT-D119A)	
33	3-709-493-01	COVER, BATTERY (for RMT-D121A/D121O)	

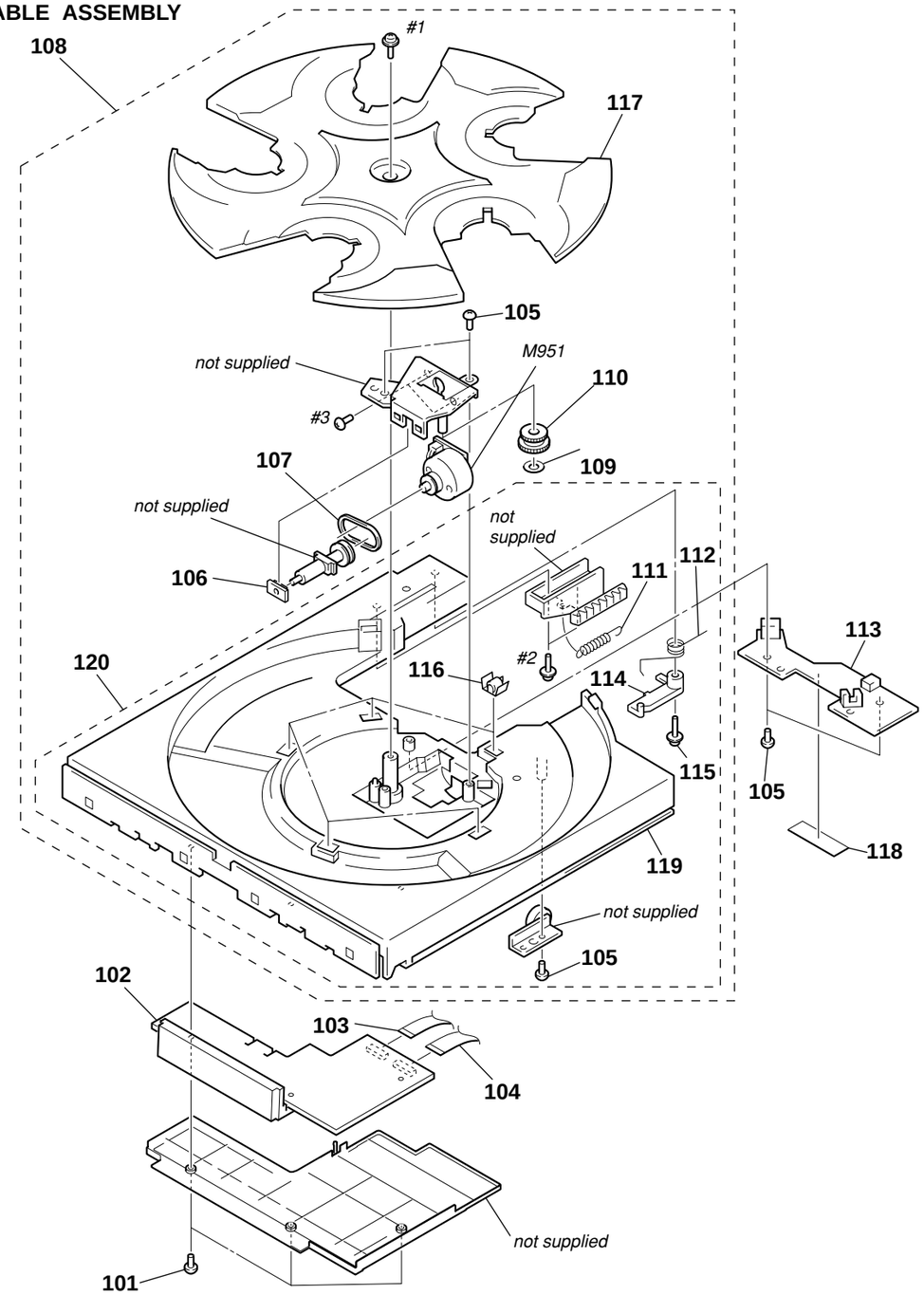
8-1-2. FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
51	X-3950-382-1	DOOR ASSY, CONTROL	
* 52	A-6065-503-A	SW-338 BOARD, COMPLETE	
53	4-951-620-01	SCREW (2.6X8), +BVTP	
54	3-061-952-01	BRACKET, SIDE	
55	X-3950-374-1	PANEL ASSY, FRONT (C670D)	
55	X-3950-381-1	PANEL ASSY, FRONT (C660)	
55	X-3950-719-1	PANEL ASSY, FRONT (C675D)	
56	3-059-319-31	BUTTON, POWER	
57	X-3950-378-1	BUTTON ASSY, HEADPHONE (C670D/C675D)	
58	X-3950-377-1	BUTTON ASSY, SURROUND (C670D/C675D)	
58	X-3950-383-1	BUTTON ASSY, SURROUND (C660)	
59	X-3950-380-1	BUTTON ASSY, DISK SELECT	
60	X-3950-379-1	BUTTON ASSY, CONTROL	

Ref. No.	Part No.	Description	Remark
* 61	A-6065-501-A	FR-170 BOARD, COMPLETE (C660)	
* 61	A-6065-502-A	FR-170 BOARD, COMPLETE (C670D/C675D)	
62	3-054-217-41	KNOB, VOLUME (C670D/C675D)	
* 63	3-684-436-01	PLATE, MOUNT (C670D/C675D)	
* 64	A-6065-496-A	HP-128 BOARD, COMPLETE (C670D/C675D)	
65	2-118-268-01	NUT (M9), HEXAGON (C670D/C675D)	
* 66	A-6065-500-A	FL-113 BOARD, COMPLETE	
67	3-531-576-11	RIVET	
68	3-970-608-51	SUMITITE (B3), +BV	
69	1-771-913-11	SWITCH, TACTILE	
70	3-059-322-31	STICK, CURSOR	
71	3-059-349-11	CUSHION, FOOT	

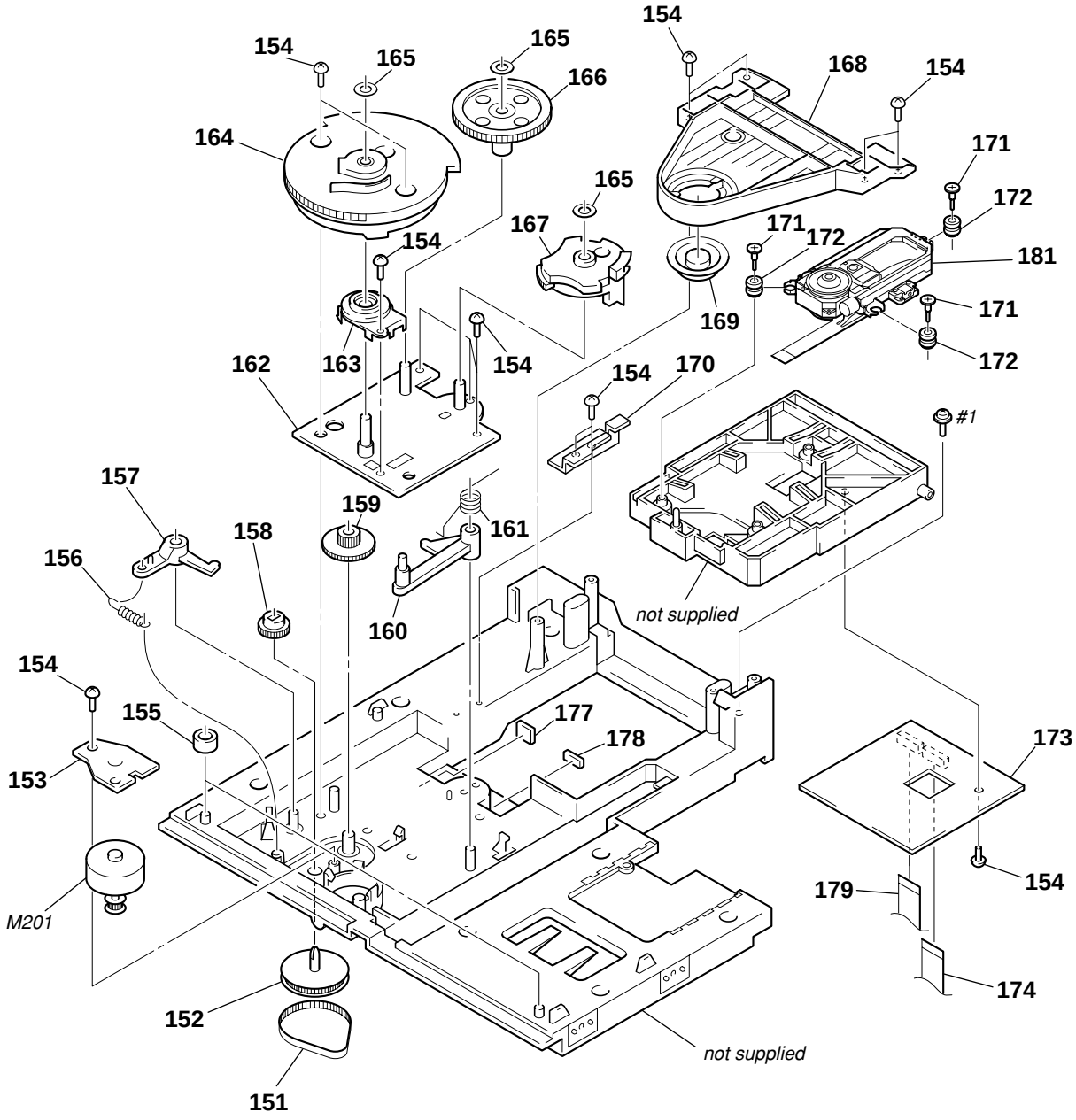
8-1-3. TABLE ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	3-970-608-51	SUMITITE (B3), +BV	
* 102	A-6065-495-A	FC-73 BOARD, COMPLETE	
103	1-792-868-11	CABLE, FLEXIBLE FLAT (FAF-003)	
104	1-792-867-11	CABLE, FLEXIBLE FLAT (FAF-002)	
105	3-970-608-11	SUMITITE (B3), +BV	
* 106	4-957-278-01	BEARING (ROTARY A)	
107	3-051-076-01	BELT (RM)	
108	A-6062-388-A	TABLE ASSY	
109	3-325-697-21	WASHER	
110	3-051-063-01	GEAR (DRIVE)	
111	4-957-294-11	SPRING (D.T), TENSION	

Ref. No.	Part No.	Description	Remark
112	4-957-293-11	SPRING (RACK RELEASE)	
* 113	A-6065-505-A	SE-110 BOARD, COMPLETE	
114	4-957-291-11	LEVER (RACK RELEASE)	
115	4-957-868-11	SCREW (+PTPWH 2.6X20)	
116	X-4947-960-1	ROLLER ASSY	
117	3-056-530-02	TABLE (ROTARY)	
118	3-941-343-21	TAPE (A)	
119	3-051-084-04	TABLE (LOADING)	
120	A-6062-505-A	TABLE (LOADING) ASSY	
M951	A-6062-080-A	MOTOR ASSY, ROTARY (TURN TABLE)	

8-1-4. CHASSIS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	4-944-490-01	BELT (TIMING)	
152	X-4946-604-1	PULLEY ASSY	
* 153	A-6065-499-A	LM-61 BOARD, COMPLETE	
154	3-970-608-11	SUMITITE (B3), +BV	
* 155	4-951-619-01	CUSHION (A)	
156	4-962-087-01	SPRING (S), TENSION	
157	3-061-963-01	LEVER, SET	
158	4-934-375-01	GEAR (LOADING B)	
159	4-957-303-01	GEAR (LOADING C)	
160	3-061-962-01	LEVER, LOCK	
161	4-957-281-11	SPRING (LOCK LEVER)	
162	X-3950-723-1	BRACKET (GEAR) ASSY	
163	1-466-996-21	ENCODER, ROTARY (LOADING)	
164	4-957-288-01	GEAR (MAIN)	
165	4-957-283-11	WASHER (5), STOPPER	
166	4-957-287-01	GEAR (REV)	
167	4-957-286-11	GEAR (U/D)	
168	3-051-074-11	BRACKET (CP)	
169	3-056-532-11	PULLEY, CHUCKING	
170	3-051-082-01	STOPPER (BU)	
171	4-981-923-01	SCREW (M), STEP	
172	3-053-847-01	INSULATOR	
* 173	A-6065-492-A	TK-57 BOARD, COMPLETE	
174	1-792-871-11	CABLE, FLEXIBLE FLAT (FMT-002)	
* 177	4-981-731-01	CUSHION (U/D)	
* 178	4-981-731-11	CUSHION (U/D)	
179	1-792-872-11	CABLE, FLEXIBLE FLAT (FMT-003)	
⚠181	A-6062-397-A	OPTICAL PICK-UP KHM-220AAA/J1RP1	
M201	A-4660-977-A	MOTOR ASSY, LOADING	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (MPW1240 and MPW1131) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  AUS: Australian model
  CND: Canadian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-493-A	AI-18 BOARD, COMPLETE (C660)			
*	A-6065-494-A	AI-18 BOARD, COMPLETE (C670D: US, CND/C675D)			
*	A-6065-555-A	AI-18 BOARD, COMPLETE (C670D: AUS, E)			
		********** (Ref. No. 2,000 Series)			
		< CAPACITOR >			
C603	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C604	1-104-665-11	ELECT	100uF	20%	25V
C605	1-128-551-11	ELECT	22uF	20%	25V
C606	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C607	1-128-551-11	ELECT	22uF	20%	25V
C608	1-128-551-11	ELECT	22uF	20%	25V
C609	1-128-551-11	ELECT	22uF	20%	25V
C610	1-128-551-11	ELECT	22uF	20%	25V
C611	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C612	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C613	1-104-664-11	ELECT	47uF	20%	25V
C614	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C615	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C616	1-104-664-11	ELECT	47uF	20%	16V
C702	1-126-933-11	ELECT	100uF	20%	16V
C703	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C704	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C660)
C705	1-104-665-11	ELECT	100uF	20%	10V (C660)
C706	1-104-665-11	ELECT	100uF	20%	10V
C708	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C709	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C710	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C660)
C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C712	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C713	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C714	1-126-965-11	ELECT	22uF	20%	50V
C715	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C716	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C660)
C717	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C718	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C719	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C720	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C721	1-126-960-11	ELECT	1uF	20%	50V
C722	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C723	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (C670D/C675D)
C725	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C726	1-126-934-11	ELECT	220uF	20%	16V (C670D/C675D)
C727	1-126-960-11	ELECT	1uF	20%	50V
C728	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (C660)
C729	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (C660)
C730	1-137-256-11	MYLAR	0.00015uF	5%	50V (C670D/C675D)
C731	1-137-256-11	MYLAR	0.00015uF	5%	50V (C670D/C675D)
C732	1-163-255-11	CERAMIC CHIP	150PF	5%	50V (C660)
C733	1-163-255-11	CERAMIC CHIP	150PF	5%	50V (C660)
C734	1-107-737-11	MYLAR	560PF	5%	50V (C670D/C675D)
C735	1-107-737-11	MYLAR	560PF	5%	50V (C670D/C675D)
C736	1-137-256-11	MYLAR	0.00015uF	5%	50V (C670D/C675D)
C737	1-163-255-11	CERAMIC CHIP	150PF	5%	50V (C660)
C738	1-137-256-11	MYLAR	0.00015uF	5%	50V (C670D/C675D)
C739	1-163-255-11	CERAMIC CHIP	150PF	5%	50V (C660)
C748	1-124-589-11	ELECT	47uF	20%	16V
C749	1-124-589-11	ELECT	47uF	20%	16V
C752	1-126-964-11	ELECT	10uF	20%	50V (C670D/C675D)
C753	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C670D/C675D)
C754	1-126-964-11	ELECT	10uF	20%	50V (C670D/C675D)
C755	1-124-261-00	ELECT	10uF	20%	50V (C670D/C675D)
C756	1-124-261-00	ELECT	10uF	20%	50V (C670D/C675D)
C757	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V

Ref. No.	Part No.	Description			Remark
C758	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C759	1-163-243-11	CERAMIC CHIP	47PF	5%	50V (C670D/C675D)
C760	1-126-933-11	ELECT	100uF	20%	16V
C761	1-126-933-11	ELECT	100uF	20%	16V
C762	1-163-243-11	CERAMIC CHIP	47PF	5%	50V (C670D/C675D)
C763	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C670D/C675D)
C764	1-126-934-11	ELECT	220uF	20%	16V (C670D/C675D)
C765	1-126-934-11	ELECT	220uF	20%	16V (C670D/C675D)
C768	1-104-987-11	MYLAR	0.001uF	5%	50V (C670D/C675D)
C769	1-104-987-11	MYLAR	0.001uF	5%	50V (C670D/C675D)
C770	1-126-963-11	ELECT	4.7uF	20%	50V (C670D/C675D)
C771	1-130-477-00	MYLAR	0.0033uF	5%	50V (C670D/C675D)
C771	1-130-478-00	MYLAR	0.0039uF	5%	50V (C660)
C772	1-130-477-00	MYLAR	0.0033uF	5%	50V (C670D/C675D)
C772	1-130-478-00	MYLAR	0.0039uF	5%	50V (C660)
C773	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C774	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C775	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C776	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C777	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C778	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C803	1-128-131-11	ELECT	22uF	20%	50V (C670D/C675D)
C804	1-124-584-00	ELECT	100uF	20%	10V (C670D/C675D)
C805	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (C670D/C675D)
C808	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (C670D/C675D)
C809	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (C670D/C675D)
C810	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V (C670D/C675D)
C811	1-128-131-11	ELECT	22uF	20%	50V (C670D/C675D)
C812	1-128-131-11	ELECT	22uF	20%	50V (C670D/C675D)
C813	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (C670D/C675D)
C814	1-126-926-11	ELECT	1000uF	20%	10V (C670D/C675D)
C814	1-126-934-11	ELECT	220uF	20%	16V (C660)
C815	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (C670D/C675D)
C816	1-104-664-11	ELECT	47uF	20%	16V
C819	1-126-935-11	ELECT	470uF	20%	6.3V
C820	1-126-964-11	ELECT	10uF	20%	50V (C660)
C821	1-126-964-11	ELECT	10uF	20%	50V (C670D/C675D)
C823	1-104-664-11	ELECT	47uF	20%	16V
C826	1-126-964-11	ELECT	10uF	20%	50V (C670D/C675D)
C827	1-126-964-11	ELECT	10uF	20%	50V
C828	1-104-664-11	ELECT	47uF	20%	16V
C829	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (C660)
C831	1-119-774-11	ELECT	100uF	20%	16V
C832	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C901	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (C670D: US, CND/C675D)
C904	1-104-664-11	ELECT	47uF	20%	16V
C905	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C906	1-126-924-11	ELECT	330uF	20%	6.3V
C907	1-104-664-11	ELECT	47uF	20%	16V
C908	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C909	1-104-665-11	ELECT	100uF	20%	10V
C910	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (C670D: US, CND/C675D)
C911	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C912	1-109-994-11	CERAMIC CHIP	2.2uF	10%	10V
C913	1-128-551-11	ELECT	22uF	20%	25V
C915	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C916	1-104-665-11	ELECT	100uF	20%	10V
C917	1-126-933-11	ELECT	100uF	20%	16V
		< CONNECTOR >			
CN601	1-794-351-11	CONNECTOR, BOARD TO BOARD 28P			
CN701	1-794-351-11	CONNECTOR, BOARD TO BOARD 28P			
CN702	1-506-468-11	PIN, CONNECTOR 3P (C670D/C675D)			
CN801	1-785-694-11	CONNECTOR, FFC/FPC 7P (C670D/C675D)			
CN802	1-794-355-11	CONNECTOR, FFC/FPC 23P (C670D/C675D)			
CN901	1-770-167-11	CONNECTOR, FFC/FPC 19P			
CN902	1-770-648-11	CONNECTOR, FFC/FPC 20P			
CN903	1-784-461-11	CONNECTOR, FFC/FPC 19P			
CN905	1-770-648-11	CONNECTOR, FFC/FPC 20P			
CN906	1-793-481-11	CONNECTOR, FFC/FPC 9P			
CN907	1-573-742-11	PIN, CONNECTOR 15P			
* CN908	1-568-955-11	PIN, CONNECTOR 6P			
* CN910	1-568-938-11	PIN, CONNECTOR 11P			
* CN911	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
		< DIODE >			
D601	8-719-071-15	DIODE HZM6.8ZWA1TL			
D602	8-719-071-15	DIODE HZM6.8ZWA1TL			
D603	8-719-071-15	DIODE HZM6.8ZWA1TL			
D604	8-719-071-15	DIODE HZM6.8ZWA1TL			
D701	8-719-988-61	DIODE 1SS355TE-17			
D702	8-719-914-43	DIODE DAN202K-T-146			
D703	8-719-914-43	DIODE DAN202K-T-146 (C670D/C675D)			
D704	8-719-988-61	DIODE 1SS355TE-17			
D705	8-719-914-43	DIODE DAN202K-T-146			
D706	8-719-988-61	DIODE 1SS355TE-17 (C670D/C675D)			
D801	8-719-914-43	DIODE DAN202K-T-146 (C670D/C675D)			
D802	8-719-072-27	DIODE MA2Z748001S0			
D803	8-719-988-61	DIODE 1SS355TE-17 (C670D/C675D)			
D902	8-719-914-43	DIODE DAN202K-T-146 (C670D: US, CND/C675D)			
		< EARTH TERMINAL >			
* ET601	1-537-738-21	TERMINAL, EARTH			
* ET701	1-537-738-21	TERMINAL, EARTH			

Ref. No.	Part No.	Description	Remark
		< FERRITE BEAD >	
FB601	1-414-553-11	FERRITE 0uH	
FB602	1-414-553-11	FERRITE 0uH	
FB603	1-414-553-11	FERRITE 0uH	
FB604	1-414-553-11	FERRITE 0uH	
FB605	1-414-553-11	FERRITE 0uH	
FB606	1-414-553-11	FERRITE 0uH	
FB701	1-414-230-22	INDUCTOR CHIP 0uH (C670D/C675D)	
FB702	1-414-230-22	INDUCTOR CHIP 0uH	
FB703	1-414-230-22	INDUCTOR CHIP 0uH	
FB704	1-414-230-22	INDUCTOR CHIP 0uH	
FB705	1-414-553-11	FERRITE 0uH	
FB706	1-414-553-11	FERRITE 0uH	
FB707	1-414-553-11	FERRITE 0uH	
FB708	1-414-553-11	FERRITE 0uH	
FB709	1-414-553-11	FERRITE 0uH	
FB710	1-414-553-11	FERRITE 0uH	
FB902	1-469-324-21	FERRITE 0uH	
FB904	1-469-324-21	FERRITE 0uH	
FB905	1-469-324-21	FERRITE 0uH	
FB906	1-469-324-21	FERRITE 0uH	
FB907	1-469-324-21	FERRITE 0uH	
FB908	1-469-324-21	FERRITE 0uH	
FB909	1-469-324-21	FERRITE 0uH	
FB910	1-469-324-21	FERRITE 0uH	
FB911	1-469-324-21	FERRITE 0uH	
FB912	1-469-324-21	FERRITE 0uH	
FB913	1-469-324-21	FERRITE 0uH	
FB914	1-469-324-21	FERRITE 0uH	
FB915	1-469-324-21	FERRITE 0uH	
FB916	1-469-324-21	FERRITE 0uH	
FB917	1-216-295-91	SHORT 0	
FB918	1-216-295-91	SHORT 0	
FB919	1-469-324-21	FERRITE 0uH	
		< IC >	
IC601	8-759-667-18	IC PQ018EZ01ZP	
IC602	8-759-667-17	IC L79M05TLL-SONY-TL	
IC603	8-759-667-63	IC LA7109-TLM	
IC701	8-759-052-52	IC L78M05TLL-SONY-TL	
IC702	7-759-667-85	IC CXD9545Q (C660)	
IC703	8-759-669-29	IC CXD9544MR	
IC704	8-759-909-71	IC BA4558F-E2	
IC706	8-759-369-74	IC NJM4556AM-TE2 (C670D/C675D)	
IC802	8-759-668-03	IC CXD9543Q (C670D/C675D)	
IC803	8-759-667-19	IC uPC29M08T-E1	
IC804	8-749-017-31	IC GP1FA550TZ (C660)	
IC804	8-749-017-80	IC GP1FA551TZ (C670D/C675D)	
IC901	8-759-100-93	IC uPC393G2-E2 (C670D: US, CND/C675D)	
IC902	8-759-522-08	IC BA6780FP-Y-E2	
		< JACK >	
J601	1-694-484-21	TERMINAL, S (2P.V) (S VIDEO OUT)	
J602	1-793-475-21	JACK, PIN 2P (VIDEO OUT)	
J701	1-793-526-21	JACK, PIN 4P (AUDIO OUT)	
J702	1-793-478-11	JACK, PIN 2P (AUDIO IN)	
J801	1-793-446-21	JACK, PIN 1P (COAXIAL)	

Ref. No.	Part No.	Description	Remark
		< SHORT >	
JR001	1-216-295-91	SHORT 0	
JR002	1-216-295-91	SHORT 0	
JR003	1-216-295-91	SHORT 0	
JR004	1-216-295-91	SHORT 0	
JR005	1-216-295-91	SHORT 0	
JR006	1-216-295-91	SHORT 0	
JR007	1-216-295-91	SHORT 0	
JR008	1-216-295-91	SHORT 0	
JR009	1-216-295-91	SHORT 0	
JR010	1-216-296-91	SHORT 0	
JR011	1-414-230-22	INDUCTOR CHIP 0uH	
JR012	1-216-295-91	SHORT 0	
JR013	1-216-295-91	SHORT 0	
JR014	1-216-295-91	SHORT 0	
JR015	1-216-295-91	SHORT 0	
JR016	1-216-295-91	SHORT 0	
JR017	1-216-295-91	SHORT 0	
JR018	1-216-295-91	SHORT 0	
JR019	1-216-295-91	SHORT 0	
JR020	1-216-295-91	SHORT 0	
JR021	1-216-296-91	SHORT 0	
JR023	1-216-296-91	SHORT 0	
JR024	1-216-295-91	SHORT 0	
JR025	1-216-295-91	SHORT 0	
JR026	1-216-295-91	SHORT 0	
JR028	1-216-295-91	SHORT 0	
JR031	1-216-296-91	SHORT 0	
JR032	1-216-295-91	SHORT 0	
JR033	1-216-296-91	SHORT 0	
JR034	1-216-296-91	SHORT 0	
JR035	1-216-296-91	SHORT 0	
JR036	1-216-296-91	SHORT 0	
JR037	1-216-296-91	SHORT 0	
JR038	1-216-296-91	SHORT 0	
JR039	1-216-296-91	SHORT 0	
JR040	1-216-296-91	SHORT 0	
JR041	1-216-296-91	SHORT 0	
JR043	1-216-296-91	SHORT 0	
JR044	1-216-296-91	SHORT 0	
JR045	1-216-296-91	SHORT 0	
JR046	1-216-296-91	SHORT 0	
JR047	1-216-296-91	SHORT 0	
JR048	1-216-296-91	SHORT 0	
JR049	1-216-296-91	SHORT 0	
JR050	1-216-296-91	SHORT 0	
JR051	1-216-296-91	SHORT 0	
JR052	1-216-296-91	SHORT 0	
JR053	1-216-296-91	SHORT 0	
JR054	1-216-296-91	SHORT 0	
JR055	1-216-296-91	SHORT 0	
JR056	1-216-296-91	SHORT 0	
JR058	1-216-296-91	SHORT 0	
JR059	1-216-296-91	SHORT 0	
JR060	1-216-296-91	SHORT 0	
JR061	1-216-296-91	SHORT 0	
JR062	1-216-296-91	SHORT 0	
JR063	1-216-296-91	SHORT 0	
JR064	1-216-296-91	SHORT 0	
JR065	1-216-296-91	SHORT 0	

Ref. No.	Part No.	Description			Remark
JR066	1-216-296-91	SHORT	0		
JR067	1-216-296-91	SHORT	0		
JR070	1-216-296-91	SHORT	0		
JR071	1-216-296-91	SHORT	0		
JR073	1-216-296-91	SHORT	0		
JR074	1-216-296-91	SHORT	0		
JR075	1-216-296-91	SHORT	0		
JR076	1-216-295-91	SHORT	0		
		< IC LINK >			
PS903	1-533-589-11	LINK, IC (750mA)			
		< TRANSISTOR >			
Q601	8-729-421-19	TRANSISTOR	UN2213-TX		
Q602	8-729-424-08	TRANSISTOR	UN2111-TX		
Q701	8-729-421-19	TRANSISTOR	UN2213-TX		
Q702	8-729-027-53	TRANSISTOR	DTC124TKA-T146		
Q703	8-729-027-53	TRANSISTOR	DTC124TKA-T146		(C670D/C675D)
Q704	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		
Q705	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		(C670D/C675D)
Q706	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q707	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q708	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q709	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q710	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q711	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q712	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q713	8-729-424-18	TRANSISTOR	UN2113-TX (C670D/C675D)		
Q714	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q715	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		(C670D/C675D)
Q716	8-729-424-18	TRANSISTOR	UN2113-TX (C670D/C675D)		
Q717	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		(C670D/C675D)
Q718	8-729-421-19	TRANSISTOR	UN2213-TX (C670D/C675D)		
Q801	8-729-421-19	TRANSISTOR	UN2213-TX (C670D/C675D)		
Q802	8-729-027-53	TRANSISTOR	DTC124TKA-T146		(C670D/C675D)
Q803	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		(C670D/C675D)
Q804	8-729-230-72	TRANSISTOR	2SA1362-YG-EL		
Q805	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		(C670D/C675D)
Q806	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L		
Q807	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L		(C670D/C675D)
Q901	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX		(C670D: US, CND/C675D)
Q902	8-729-424-18	TRANSISTOR	UN2113-TX		(C670D: US, CND/C675D)
		< RESISTOR >			
R004	1-216-105-91	RES-CHIP	220K	5%	1/10W
R005	1-216-041-00	METAL CHIP	470	5%	1/10W
R006	1-216-041-00	METAL CHIP	470	5%	1/10W
R007	1-216-105-91	RES-CHIP	220K	5%	1/10W
R601	1-216-089-91	RES-CHIP	47K	5%	1/10W
R602	1-216-089-91	RES-CHIP	47K	5%	1/10W
R603	1-216-089-91	RES-CHIP	47K	5%	1/10W
R604	1-216-089-91	RES-CHIP	47K	5%	1/10W
R605	1-216-089-91	RES-CHIP	47K	5%	1/10W
R606	1-216-089-91	RES-CHIP	47K	5%	1/10W
R607	1-216-073-00	METAL CHIP	10K	5%	1/10W
R608	1-216-021-00	METAL CHIP	68	5%	1/10W
R609	1-216-021-00	METAL CHIP	68	5%	1/10W
R610	1-216-021-00	METAL CHIP	68	5%	1/10W
R611	1-216-073-00	METAL CHIP	10K	5%	1/10W
R612	1-216-295-91	SHORT	0		
R613	1-216-021-00	METAL CHIP	68	5%	1/10W
R614	1-216-021-00	METAL CHIP	68	5%	1/10W
R615	1-216-021-00	METAL CHIP	68	5%	1/10W
R616	1-216-021-00	METAL CHIP	68	5%	1/10W
R617	1-216-021-00	METAL CHIP	68	5%	1/10W
R618	1-216-021-00	METAL CHIP	68	5%	1/10W
R701	1-216-295-91	SHORT	0		
R702	1-216-295-91	SHORT	0		
R703	1-216-295-91	SHORT	0		
R704	1-216-295-91	SHORT	0		
R705	1-216-295-91	SHORT	0 (C670D/C675D)		
R706	1-216-001-00	METAL CHIP	10	5%	1/10W (C670D/C675D)
R707	1-216-025-91	RES-CHIP	100	5%	1/10W
R708	1-216-025-91	RES-CHIP	100	5%	1/10W
R709	1-216-295-91	SHORT	0		
R710	1-216-295-91	SHORT	0		
R711	1-216-033-00	METAL CHIP	220	5%	1/10W
R712	1-216-033-00	METAL CHIP	220	5%	1/10W (C670D/C675D)
R712	1-216-295-91	SHORT	0 (C660)		
R713	1-216-295-91	SHORT	0		
R714	1-216-025-91	RES-CHIP	100	5%	1/10W (C660)
R715	1-216-295-91	SHORT	0		
R716	1-216-295-91	SHORT	0		
R718	1-216-009-91	RES-CHIP	22	5%	1/10W
R721	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R722	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R723	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R724	1-216-073-00	METAL CHIP	10K	5%	1/10W
R725	1-216-073-00	METAL CHIP	10K	5%	1/10W
R726	1-216-089-91	RES-CHIP	47K	5%	1/10W
R727	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R728	1-216-089-91	RES-CHIP	47K	5%	1/10W (C670D/C675D)
R729	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R730	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R731	1-216-073-00	METAL CHIP	10K	5%	1/10W
R732	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R733	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R734	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R736	1-216-073-00	METAL CHIP	10K	5%	1/10W
R737	1-216-073-00	METAL CHIP	10K	5%	1/10W
R738	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R739	1-216-053-00	METAL CHIP	1.5K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R740	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R741	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R742	1-216-073-00	METAL CHIP	10K	5%	1/10W
R743	1-216-073-00	METAL CHIP	10K	5%	1/10W
R752	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R753	1-216-041-00	METAL CHIP	470	5%	1/10W
R754	1-216-041-00	METAL CHIP	470	5%	1/10W
R755	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R756	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R757	1-216-089-91	RES-CHIP	47K	5%	1/10W
R758	1-216-089-91	RES-CHIP	47K	5%	1/10W
R759	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R760	1-216-097-91	RES-CHIP	100K	5%	1/10W (C670D/C675D)
R761	1-216-097-91	RES-CHIP	100K	5%	1/10W (C670D/C675D)
R764	1-216-295-91	SHORT	0		(C670D/C675D)
R765	1-216-295-91	SHORT	0		(C670D/C675D)
R766	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R767	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R768	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R769	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (C660)
R770	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R771	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (C670D/C675D)
R772	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R773	1-216-097-91	RES-CHIP	100K	5%	1/10W
R774	1-216-049-91	RES-CHIP	1K	5%	1/10W
R775	1-216-025-91	RES-CHIP	100	5%	1/10W (C670D/C675D)
R776	1-216-025-91	RES-CHIP	100	5%	1/10W (C670D/C675D)
R777	1-216-097-91	RES-CHIP	100K	5%	1/10W (C670D/C675D)
R778	1-216-089-91	RES-CHIP	47K	5%	1/10W
R779	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R780	1-216-085-00	METAL CHIP	33K	5%	1/10W (C670D/C675D)
R781	1-216-049-91	RES-CHIP	1K	5%	1/10W
R782	1-216-097-91	RES-CHIP	100K	5%	1/10W (C670D/C675D)
R783	1-216-295-91	SHORT	0 (C670D/C675D)		
R784	1-216-295-91	SHORT	0 (C670D/C675D)		
R785	1-216-097-91	RES-CHIP	100K	5%	1/10W (C670D/C675D)
R786	1-216-039-00	METAL CHIP	390	5%	1/10W (C670D/C675D)
R787	1-216-041-00	METAL CHIP	470	5%	1/10W
R788	1-216-041-00	METAL CHIP	470	5%	1/10W
R789	1-216-041-00	METAL CHIP	470	5%	1/10W
R790	1-216-041-00	METAL CHIP	470	5%	1/10W
R791	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R792	1-216-295-91	SHORT	0 (C670D/C675D)		
R793	1-216-295-91	SHORT	0 (C670D/C675D)		
R794	1-216-295-91	SHORT	0 (C670D/C675D)		
R795	1-216-041-00	METAL CHIP	470	5%	1/10W
R796	1-216-041-00	METAL CHIP	470	5%	1/10W
R797	1-216-295-91	SHORT	0 (C670D/C675D)		
R801	1-216-295-91	SHORT	0		
R802	1-216-025-91	RES-CHIP	100	5%	1/10W (C670D/C675D)
R803	1-216-295-91	SHORT	0 (C670D/C675D)		
R804	1-216-295-91	SHORT	0 (C670D/C675D)		
R805	1-216-295-91	SHORT	0 (C670D/C675D)		
R806	1-216-295-91	SHORT	0 (C670D/C675D)		
R807	1-216-001-00	METAL CHIP	10	5%	1/10W (C670D/C675D)
R808	1-216-001-00	METAL CHIP	10	5%	1/10W (C670D/C675D)
R809	1-216-295-91	SHORT	0 (C670D/C675D)		
R810	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R811	1-216-295-91	SHORT	0 (C670D/C675D)		
R812	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R813	1-216-295-91	SHORT	0 (C670D/C675D)		
R814	1-216-295-91	SHORT	0 (C670D/C675D)		
R815	1-216-295-91	SHORT	0		
R817	1-216-295-91	SHORT	0 (C670D/C675D)		
R819	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R820	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R821	1-216-089-91	RES-CHIP	47K	5%	1/10W (C670D/C675D)
R822	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R823	1-216-025-91	RES-CHIP	100	5%	1/10W
R824	1-216-295-91	SHORT	0		
R825	1-216-049-91	RES-CHIP	1K	5%	1/10W
R826	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R827	1-216-033-00	METAL CHIP	220	5%	1/10W
R828	1-216-049-91	RES-CHIP	1K	5%	1/10W (C660)
R829	1-216-049-91	RES-CHIP	1K	5%	1/10W
R830	1-216-081-00	METAL CHIP	22K	5%	1/10W (C670D/C675D)
R831	1-216-073-00	METAL CHIP	10K	5%	1/10W (C670D/C675D)
R832	1-216-049-91	RES-CHIP	1K	5%	1/10W (C670D/C675D)
R833	1-216-025-91	RES-CHIP	100	5%	1/10W
R834	1-216-295-91	SHORT	0		
R836	1-216-021-00	METAL CHIP	68	5%	1/10W
R837	1-216-021-00	METAL CHIP	68	5%	1/10W (C670D/C675D)
R838	1-216-033-00	METAL CHIP	220	5%	1/10W (C660)
R839	1-216-295-91	SHORT	0		
R903	1-216-295-91	SHORT	0		
R910	1-216-081-00	METAL CHIP	22K	5%	1/10W (C670D: US, CND/C675D)

Ref. No.	Part No.	Description			Remark
R911	1-216-081-00	METAL CHIP	22K	5%	1/10W
			(C670D: US, CND/C675D)		
R912	1-216-073-00	METAL CHIP	10K	5%	1/10W
			(C670D: US, CND/C675D)		
R913	1-216-049-91	RES-CHIP	1K	5%	1/10W
			(C670D: US, CND/C675D)		
R917	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
			(C670D: US, CND/C675D)		
R919	1-216-073-00	METAL CHIP	10K	5%	1/10W
R920	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R921	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R922	1-216-075-00	METAL CHIP	12K	5%	1/10W
R924	1-217-907-11	RES-CHIP	1.8	5%	1/10W
R925	1-217-907-11	RES-CHIP	1.8	5%	1/10W
R926	1-217-907-11	RES-CHIP	1.8	5%	1/10W
		< RELAY >			
RY701	1-755-184-11	RELAY			
*	A-6065-504-A	CH-97 BOARD, COMPLETE (C670D/C675D)			
		**********			
					(Ref. No. 2,000 Series)
		< CAPACITOR >			
C401	1-137-605-11	MYLAR	0.00022uF	5%	50V
C402	1-137-605-11	MYLAR	0.00022uF	5%	50V
C403	1-163-255-11	CERAMIC CHIP	150PF	5%	50V
C404	1-163-255-11	CERAMIC CHIP	150PF	5%	50V
C405	1-137-256-11	MYLAR	0.00015uF	5%	50V
C406	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C407	1-130-470-00	MYLAR	820PF	5%	50V
C408	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C410	1-130-470-00	MYLAR	820PF	5%	50V
C411	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C412	1-104-987-11	MYLAR	0.001uF	5%	50V
C413	1-137-605-11	MYLAR	0.00022uF	5%	50V
C414	1-163-255-11	CERAMIC CHIP	150PF	5%	50V
C415	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C416	1-137-605-11	MYLAR	0.00022uF	5%	50V
C417	1-163-255-11	CERAMIC CHIP	150PF	5%	50V
C418	1-137-256-11	MYLAR	0.00015uF	5%	50V
C419	1-126-965-11	ELECT	22uF	20%	50V
C421	1-126-965-11	ELECT	22uF	20%	50V
C423	1-126-965-11	ELECT	22uF	20%	50V
C424	1-126-965-11	ELECT	22uF	20%	50V
C425	1-126-965-11	ELECT	22uF	20%	50V
C426	1-126-965-11	ELECT	22uF	20%	50V
C427	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C428	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C429	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C430	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C431	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C432	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C433	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C434	1-137-605-11	MYLAR	0.00022uF	5%	50V
C435	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C436	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C437	1-104-987-11	MYLAR	0.001uF	5%	50V
C438	1-104-987-11	MYLAR	0.001uF	5%	50v
C445	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C446	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C447	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C448	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
		< CONNECTOR >			
CN401	1-785-729-11	CONNECTOR, FFC/FPC 7P			
CN402	1-794-355-11	CONNECTOR, FFC/FPC 23P			
		< DIODE >			
D401	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB401	1-414-553-11	FERRITE	0uH		
FB402	1-414-553-11	FERRITE	0uH		
FB403	1-414-553-11	FERRITE	0uH		
FB404	1-414-553-11	FERRITE	0uH		
FB405	1-414-553-11	FERRITE	0uH		
FB406	1-414-553-11	FERRITE	0uH		
		< IC >			
IC401	8-759-909-71	IC BA4558F-E2			
IC402	8-759-909-71	IC BA4558F-E2			
IC403	8-759-909-71	IC BA4558F-E2			
		< JACK >			
J401	1-793-482-11	JACK, PIN 6P (5.1CH OUTPUT)			
		< TRANSISTOR >			
Q401	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q402	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q403	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q404	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q405	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q406	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q407	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
		< RESISTOR >			
R401	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R402	1-216-075-00	METAL CHIP	12K	5%	1/10W
R403	1-216-075-00	METAL CHIP	12K	5%	1/10W
R404	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R405	1-216-075-00	METAL CHIP	12K	5%	1/10W
R406	1-216-075-00	METAL CHIP	12K	5%	1/10W
R407	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R408	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R409	1-216-041-00	METAL CHIP	470	5%	1/10W
R410	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R411	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R412	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R413	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R414	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R415	1-216-041-00	METAL CHIP	470	5%	1/10W
R416	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R417	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R418	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R419	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R420	1-216-075-00	METAL CHIP	12K	5%	1/10W
R421	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R422	1-216-075-00	METAL CHIP	12K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R423	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R424	1-216-075-00	METAL CHIP	12K	5%	1/10W
R425	1-216-075-00	METAL CHIP	12K	5%	1/10W
R426	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R427	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R428	1-216-041-00	METAL CHIP	470	5%	1/10W
R429	1-216-041-00	METAL CHIP	470	5%	1/10W
R430	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R431	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R434	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R435	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R436	1-216-097-91	RES-CHIP	100K	5%	1/10W
R437	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R438	1-216-041-00	METAL CHIP	470	5%	1/10W
R439	1-216-041-00	METAL CHIP	470	5%	1/10W
R440	1-216-041-00	METAL CHIP	470	5%	1/10W
R441	1-216-041-00	METAL CHIP	470	5%	1/10W
R444	1-216-049-91	RES-CHIP	1K	5%	1/10W
R445	1-216-089-91	RES-CHIP	47K	5%	1/10W
R446	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R447	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R448	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R449	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R450	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R451	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R452	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R453	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R454	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R455	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R456	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R457	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R458	1-216-049-91	RES-CHIP	1K	5%	1/10W
R459	1-216-049-91	RES-CHIP	1K	5%	1/10W
R460	1-216-089-91	RES-CHIP	47K	5%	1/10W
R461	1-216-089-91	RES-CHIP	47K	5%	1/10W
R462	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R463	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R464	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R465	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R468	1-216-089-91	RES-CHIP	47K	5%	1/10W
R469	1-216-089-91	RES-CHIP	47K	5%	1/10W
R470	1-216-089-91	RES-CHIP	47K	5%	1/10W
R471	1-216-089-91	RES-CHIP	47K	5%	1/10W
		< RELAY >			
RY401	1-755-184-11	RELAY			
*	A-6065-497-A	CV-33 BOARD, COMPLETE (C660/C670D: AUS, E)			
*	A-6065-498-A	CV-33 BOARD, COMPLETE (C670D: US, CND/C675D)			
		********** (Ref. No. 2,000 Series)			
		< CAPACITOR >			
C301	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (C670D: US, CND/C675D)
C302	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V

Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
CN301	1-785-730-11	CONNECTOR, FFC/FPC 9P			
		< DIODE >			
D301	8-719-988-61	DIODE 1SS355TE-17			
D302	8-719-067-40	DIODE STZ6.8N-T146 (C670D: US, CND/C675D)			
		< FERRITE BEAD >			
FB301	1-414-553-11	FERRITE	0uH		
FB302	1-414-553-11	FERRITE	0uH		(C670D: US, CND/C675D)
FB305	1-414-553-11	FERRITE	0uH		
FB306	1-414-553-11	FERRITE	0uH		
FB307	1-414-553-11	FERRITE	0uH		
		< JACK >			
J301	1-793-483-11	JACK, PIN 3P (COMPONENT VIDEO OUT)			
J302	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK) (C670D: US, CND/C675D)			
J303	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5) (MEGA CONTROL)			
		< COIL >			
L301	1-414-930-21	INDUCTOR	2.2uH		
		< TRANSISTOR >			
Q301	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
		< RESISTOR >			
R302	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R303	1-216-073-00	METAL CHIP	10K	5%	1/10W
R304	1-216-001-00	METAL CHIP	10	5%	1/10W
R308	1-216-295-91	SHORT	0 (C670D: US, CND/C675D)		
R309	1-216-049-91	RES-CHIP	1K	5%	1/10W (C670D: US, CND/C675D)
R310	1-216-295-91	SHORT	0		
R311	1-216-295-91	SHORT	0		
*	A-6065-495-A	FC-73 BOARD, COMPLETE			
		********** (Ref. No. 3,000 Series)			
	3-059-273-01	HOLDER, FL			
		< BUZZER >			
BZ401	1-529-107-11	BUZZER, PIEZOELECTRIC			
		< CAPACITOR >			
C401	1-124-234-00	ELECT	22uF	20%	16V
C402	1-137-415-11	MYLAR	0.0068uF	10%	100V
C403	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C404	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C405	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C406	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C407	1-124-589-11	ELECT	47uF	20%	16V
C408	1-128-131-11	ELECT	22uF	20%	50V
C409	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C410	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V

Ref. No.	Part No.	Description			Remark
C411	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C414	1-164-346-11	CERAMIC CHIP	1uF		16V
C415	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
		< CONNECTOR >			
CN401	1-794-354-11	CONNECTOR, FFC/FPC 19P			
CN402	1-794-353-11	CONNECTOR, FFC/FPC 20P			
* CN403	1-568-944-11	PIN, CONNECTOR 6P			
		< DIODE >			
D001	8-719-914-44	DIODE DAP202K-T-146			
D401	8-719-041-97	DIODE MA113- (TX)			
D402	8-719-041-97	DIODE MA113- (TX)			
D403	8-719-041-97	DIODE MA113- (TX)			
D404	8-719-041-97	DIODE MA113- (TX)			
D405	8-719-988-61	DIODE 1SS355TE-17			
D406	8-719-422-80	DIODE MA8075-H-TX			
D408	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB401	1-469-324-21	FERRITE	0uH		
FB402	1-469-324-21	FERRITE	0uH		
FB403	1-469-324-21	FERRITE	0uH		
FB404	1-469-324-21	FERRITE	0uH		
		< IC >			
IC401	8-759-679-84	IC M38B57M6-150FP			
IC402	8-759-326-78	IC PST9140NL			
IC403	8-759-525-43	IC TC74HCT08AF (EL)			
		< SHORT >			
JR401	1-216-296-91	SHORT	0		
JR402	1-216-296-91	SHORT	0		
JR403	1-216-296-91	SHORT	0		
JR404	1-216-295-91	SHORT	0		
JR405	1-216-296-91	SHORT	0		
JR406	1-216-295-91	SHORT	0		
JR408	1-216-295-91	SHORT	0		
JR409	1-216-296-91	SHORT	0		
JR410	1-216-296-91	SHORT	0		
JR411	1-216-296-91	SHORT	0		
JR412	1-216-296-91	SHORT	0		
JR413	1-216-296-91	SHORT	0		
JR414	1-216-296-91	SHORT	0		
JR415	1-216-295-91	SHORT	0		
JR420	1-216-295-91	SHORT	0		
JR421	1-216-295-91	SHORT	0		
JR423	1-216-296-91	SHORT	0		
JR424	1-216-296-91	SHORT	0		
JR425	1-216-296-91	SHORT	0		
JR426	1-216-296-91	SHORT	0		
JR427	1-216-295-91	SHORT	0		
JR429	1-216-295-91	SHORT	0		
		< COIL >			
L401	1-408-978-21	INDUCTOR	47uH		
		< FLUORESCENT INDICATOR TUBE >			
ND401	1-517-980-11	INDICATOR TUBE, FLUORESCENT			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q401	8-729-808-42	TRANSISTOR	2SD1624-T-TD		
Q402	8-729-808-42	TRANSISTOR	2SD1624-T-TD		
Q403	8-729-421-19	TRANSISTOR	UN2213-TX		
		< RESISTOR >			
R401	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R402	1-216-295-91	SHORT	0		
R403	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R404	1-216-073-00	METAL CHIP	10K	5%	1/10W
R405	1-216-073-00	METAL CHIP	10K	5%	1/10W
R406	1-216-097-91	RES-CHIP	100K	5%	1/10W
R407	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R408	1-216-025-91	RES-CHIP	100	5%	1/10W
R409	1-216-097-91	RES-CHIP	100K	5%	1/10W
R410	1-216-073-00	METAL CHIP	10K	5%	1/10W
R411	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R412	1-216-073-00	METAL CHIP	10K	5%	1/10W
R414	1-216-025-91	RES-CHIP	100	5%	1/10W
R415	1-216-025-91	RES-CHIP	100	5%	1/10W
R416	1-216-025-91	RES-CHIP	100	5%	1/10W
R417	1-216-025-91	RES-CHIP	100	5%	1/10W
R418	1-216-073-00	METAL CHIP	10K	5%	1/10W
R419	1-216-073-00	METAL CHIP	10K	5%	1/10W
R420	1-216-073-00	METAL CHIP	10K	5%	1/10W
R421	1-216-073-00	METAL CHIP	10K	5%	1/10W
R422	1-216-295-91	SHORT	0		
R423	1-216-025-91	RES-CHIP	100	5%	1/10W
R424	1-216-295-91	SHORT	0		
R425	1-216-295-91	SHORT	0		
R426	1-216-295-91	SHORT	0		
R427	1-216-295-91	SHORT	0		
R428	1-216-295-91	SHORT	0		
R429	1-216-097-91	RES-CHIP	100K	5%	1/10W
R431	1-216-097-91	RES-CHIP	100K	5%	1/10W
R434	1-216-097-91	RES-CHIP	100K	5%	1/10W
R435	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R436	1-216-073-00	METAL CHIP	10K	5%	1/10W
R437	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R438	1-216-073-00	METAL CHIP	10K	5%	1/10W
R439	1-216-295-91	SHORT	0		
R440	1-216-295-91	SHORT	0		
R441	1-216-025-91	RES-CHIP	100	5%	1/10W
R443	1-216-025-91	RES-CHIP	100	5%	1/10W
R445	1-216-025-91	RES-CHIP	100	5%	1/10W
R446	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R447	1-216-025-91	RES-CHIP	100	5%	1/10W
R448	1-216-049-91	RES-CHIP	1K	5%	1/10W
R449	1-216-025-91	RES-CHIP	100	5%	1/10W
R450	1-216-093-91	RES-CHIP	68K	5%	1/10W
R451	1-216-093-91	RES-CHIP	68K	5%	1/10W
R452	1-216-093-91	RES-CHIP	68K	5%	1/10W
R453	1-216-093-91	RES-CHIP	68K	5%	1/10W
R454	1-216-093-91	RES-CHIP	68K	5%	1/10W
R455	1-216-093-91	RES-CHIP	68K	5%	1/10W
R456	1-216-093-91	RES-CHIP	68K	5%	1/10W
R457	1-216-093-91	RES-CHIP	68K	5%	1/10W
R458	1-216-093-91	RES-CHIP	68K	5%	1/10W
R459	1-216-093-91	RES-CHIP	68K	5%	1/10W
R460	1-216-097-91	RES-CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R461	1-216-025-91	RES-CHIP	100	5%	1/10W
R462	1-216-073-00	METAL CHIP	10K	5%	1/10W
R463	1-216-073-00	METAL CHIP	10K	5%	1/10W
R464	1-216-073-00	METAL CHIP	10K	5%	1/10W
R465	1-216-073-00	METAL CHIP	10K	5%	1/10W
R466	1-216-073-00	METAL CHIP	10K	5%	1/10W
R467	1-216-073-00	METAL CHIP	10K	5%	1/10W
R468	1-216-073-00	METAL CHIP	10K	5%	1/10W
R469	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-049-91	RES-CHIP	1K	5%	1/10W
R471	1-216-097-91	RES-CHIP	100K	5%	1/10W
		< TRANSFORMER >			
T401	1-435-507-11	TRANSFORMER, DC-DC CONVERTER			
		< VIBRATOR >			
X401	1-781-282-31	VIBRATOR, CERAMIC (4MHz)			
*	A-6065-500-A	FL-113 BOARD, COMPLETE			
		**********			
		(Ref. No. 4,000 Series)			
		< CAPACITOR >			
C101	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C102	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C103	1-124-589-11	ELECT	47uF	20%	16V
C104	1-124-589-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN101	1-750-187-11	CONNECTOR, BOARD TO BOARD 10P			
CN102	1-691-650-11	SOCKET, CONNECTOR 19P			
* CN103	1-568-942-11	PIN, CONNECTOR 4P			
CN104	1-785-729-11	CONNECTOR, FFC/FPC 7P			
		< DIODE >			
D101	8-719-079-90	DIODE SML-010DT-T86 (MEGA CONTROL)			
D102	8-719-079-89	DIODE SML-020MDT-T86 (DISC SELECT 1)			
D103	8-719-079-89	DIODE SML-020MDT-T86 (DISC SELECT 2)			
D104	8-719-079-89	DIODE SML-020MDT-T86 (DISC SELECT 3)			
D105	8-719-079-89	DIODE SML-020MDT-T86 (DISC SELECT 4)			
D106	8-719-079-89	DIODE SML-020MDT-T86 (DISC SELECT 5)			
		< IC >			
IC101	8-759-675-63	IC NJU3715G (TE2)			
IC102	8-749-011-22	IC GP1U27X			
		< TRANSISTOR >			
Q101	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q102	1-801-806-11	TRANSISTOR	DTC144EKA-T146		
		< RESISTOR >			
R101	1-216-081-00	METAL CHIP	22K	5%	1/10W
R102	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R103	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R106	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R109	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R110	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R111	1-216-037-00	METAL CHIP	330	5%	1/10W
R112	1-216-033-00	METAL CHIP	220	5%	1/10W
R113	1-216-037-00	METAL CHIP	330	5%	1/10W
R114	1-216-033-00	METAL CHIP	220	5%	1/10W
R115	1-216-037-00	METAL CHIP	330	5%	1/10W
R116	1-216-033-00	METAL CHIP	220	5%	1/10W
R117	1-216-037-00	METAL CHIP	330	5%	1/10W
R118	1-216-033-00	METAL CHIP	220	5%	1/10W
R119	1-216-037-00	METAL CHIP	330	5%	1/10W
R120	1-216-033-00	METAL CHIP	220	5%	1/10W
R121	1-216-037-00	METAL CHIP	330	5%	1/10W
R122	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R125	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R126	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
R128	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R129	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R133	1-216-081-00	METAL CHIP	22K	5%	1/10W
R134	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R135	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R136	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R137	1-216-083-00	METAL CHIP	27K	5%	1/10W
R138	1-216-073-00	METAL CHIP	10K	5%	1/10W
R139	1-216-089-91	RES-CHIP	47K	5%	1/10W
R140	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S101	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 1)			
S102	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 2)			
S103	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 3)			
S104	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 4)			
S105	1-771-349-21	SWITCH, KEYBOARD (DISC SELECT 5)			
S106	1-771-349-21	SWITCH, KEYBOARD (PREV ⏮)			
S107	1-771-349-21	SWITCH, KEYBOARD (NEXT ⏭)			
S108	1-771-349-21	SWITCH, KEYBOARD (▷)			
S109	1-771-349-21	SWITCH, KEYBOARD (⏸)			
S110	1-771-349-21	SWITCH, KEYBOARD (■)			
S111	1-771-349-21	SWITCH, KEYBOARD (⏏)			
S112	1-771-349-21	SWITCH, KEYBOARD (MEGA CONTROL)			
S113	1-771-349-21	SWITCH, KEYBOARD (EXCHANGE)			
S114	1-771-349-21	SWITCH, KEYBOARD (DISC SKIP)			
S115	1-771-349-21	SWITCH, KEYBOARD (DISPLAY)			
*	A-6065-501-A	FR-170 BOARD, COMPLETE (C660)			
*	A-6065-502-A	FR-170 BOARD, COMPLETE (C670D/C675D)			
		**********			
		(Ref. No. 2,000 Series)			
		< CONNECTOR >			
* CN201	1-750-196-11	CONNECTOR, BOARD TO BOARD 10P			
		< DIODE >			
D201	8-719-079-90	DIODE SML-010DT-T86 (VIRTUAL 3D SURROND)			
D202	8-719-079-90	DIODE SML-010DT-T86 (R^2) (C670D/C675D)			
D203	8-719-079-90	DIODE SML-010DT-T86 (VIRTUAL 3D HEAD PHONE) (C670D/C675D)			
D204	8-719-066-39	DIODE EB3804X-TP-J300K (DOLBY DIGITAL) (C670D/C675D)			
D207	8-719-067-82	DIODE SML-020MLTT86 (ON/STANDBY)			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q201	8-729-027-59	TRANSISTOR	DTC144EKA-T146		(C670D/C675D)
Q201	8-729-421-19	TRANSISTOR	UN2213-TX (C660)		
Q202	8-729-027-59	TRANSISTOR	DTC144EKA-T146		(C670D/C675D)
Q202	8-729-421-19	TRANSISTOR	UN2213-TX (C660)		
		< RESISTOR >			
R201	1-216-059-00	METAL CHIP	2.7K	5% 1/10W	(C670D/C675D)
R202	1-216-037-00	METAL CHIP	330	5% 1/10W	
R203	1-216-033-00	METAL CHIP	220	5% 1/10W	
R204	1-216-037-00	METAL CHIP	330	5% 1/10W	(C670D/C675D)
R205	1-216-043-91	RES-CHIP	560	5% 1/10W	(C670D/C675D)
R206	1-216-063-91	RES-CHIP	3.9K	5% 1/10W	(C670D/C675D)
R207	1-216-037-00	METAL CHIP	330	5% 1/10W	(C670D/C675D)
R208	1-216-037-00	METAL CHIP	330	5% 1/10W	
R209	1-216-081-00	METAL CHIP	22K	5% 1/10W	
		< SWITCH >			
S201	1-771-349-21	SWITCH, KEYBOARD			(VIRTUAL 3D SURROUND)
S202	1-771-349-21	SWITCH, KEYBOARD (R^2) (C670D/C675D)			
S203	1-771-349-21	SWITCH, KEYBOARD (VIRTUAL 3D			HEAD PHONE) (C670D/C675D)

*	A-6065-496-A	HP-128 BOARD, COMPLETE (C670D/C675D)				
		**********				(Ref. No. 2,000 Series)
		< CAPACITOR >				
C501	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
C502	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
		< CONNECTOR >				
* CN501	1-568-941-11	PIN, CONNECTOR 3P				
		< DIODE >				
D501	8-719-071-15	DIODE HZM6.8ZWA1TL				
D502	8-719-071-15	DIODE HZM6.8ZWA1TL				
		< FERRITE BEAD >				
FB501	1-414-553-11	FERRITE	0uH			
FB502	1-414-553-11	FERRITE	0uH			
FB503	1-414-553-11	FERRITE	0uH			
		< JACK >				
J501	1-785-505-31	JACK, LARGE TYPE (PHONES)				
		< VARIABLE RESISTOR >				
RV501	1-225-738-21	RES, VAR, CARBON 500/500 (LEVEL)				

Ref. No.	Part No.	Description				Remark
*	A-6065-499-A	LM-61 BOARD, COMPLETE				
		**********				(Ref. No. 2,000 Series)
*	A-6065-488-A	MB-87 BOARD, COMPLETE (C660)				
*	A-6065-489-A	MB-87 BOARD, COMPLETE				(C670D: US, CND/C675D)
*	A-6065-490-A	MB-87 BOARD, COMPLETE (C670D: E)				
*	A-6065-491-A	MB-87 BOARD, COMPLETE (C670D: AUS)				
		**********				(Ref. No. 1,000 Series)
		< CAPACITOR >				
C101	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C102	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C104	1-126-209-11	ELECT CHIP	100uF	20%	4V	
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C108	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C109	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C110	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	
C111	1-126-209-11	ELECT CHIP	100uF	20%	4V	
C112	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C113	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C114	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C115	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C117	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C118	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C119	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C301	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V	
C302	1-126-209-11	ELECT CHIP	100uF	20%	4V	
C303	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C305	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C306	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C308	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C310	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C315	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C316	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C319	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	
C320	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	

Ref. No.	Part No.	Description			Remark
C330	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C331	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C402	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C403	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C405	1-126-204-11	ELECT CHIP	47uF	20%	16V
C409	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C410	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C411	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C412	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C413	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C414	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C415	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C416	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C417	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C418	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C419	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C420	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C422	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C424	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C425	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C426	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C427	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C428	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C429	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C430	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C431	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C433	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C434	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C435	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C436	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C437	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C438	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C439	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C440	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C441	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C442	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C443	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C444	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C445	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C446	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C447	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C448	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C449	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C450	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C451	1-126-204-11	ELECT CHIP	47uF	20%	16V
C452	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C453	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C454	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C455	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C456	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C457	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C458	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C459	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C462	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C463	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C465	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C501	1-124-779-00	ELECT CHIP	10uF	20%	16V
C502	1-124-779-00	ELECT CHIP	10uF	20%	16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C504	1-124-779-00	ELECT CHIP	10uF	20%	16V
C505	1-125-822-11	TANTALUM	10uF	20%	10V
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C507	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C510	1-124-779-00	ELECT CHIP	10uF	20%	16V
C511	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C512	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C517	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C518	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C519	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C522	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C523	1-125-822-11	TANTALUM	10uF	20%	10V
C524	1-126-204-11	ELECT CHIP	47uF	20%	16V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C528	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C533	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C534	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C535	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C536	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C537	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C538	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C539	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C540	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C541	1-124-779-00	ELECT CHIP	10uF	20%	16V
C542	1-126-193-11	ELECT	1uF	20%	50V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C701	1-126-209-11	ELECT CHIP	100uF	20%	4V (C670D/C675D)
C702	1-126-209-11	ELECT CHIP	100uF	20%	4V (C670D/C675D)
C703	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C704	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C705	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C706	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (C670D/C675D)

Ref. No.	Part No.	Description				Remark
C708	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C709	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C710	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C711	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C712	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C713	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C714	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C715	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C716	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C718	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C719	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C720	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C721	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C722	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C723	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(C670D/C675D)
C801	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C802	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C804	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C805	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C806	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
		< CONNECTOR >				
CN402	1-774-731-21	PIN, CONNECTOR (PC BOARD) 5P				
CN404	1-794-425-11	CONNECTOR, FCC/FPC 20P				
CN405	1-794-424-11	CONNECTOR, FCC/FPC 16P				
CN502	1-794-352-21	CONNECTOR, BOARD TO BOARD 28P				
CN702	1-794-352-21	CONNECTOR, BOARD TO BOARD 28P				
CN801	1-779-344-11	CONNECTOR, FFC/FPC 20P				
		< DIODE >				
D101	8-719-071-34	DIODE RB521S-30-TE61				
		< SHORT >				
F401	1-216-296-91	SHORT	0			
F402	1-216-296-91	SHORT	0			
		< FERRITE BEAD >				
FB102	1-414-226-21	INDUCTOR CHIP	0uH			
FB103	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB104	1-414-226-21	INDUCTOR CHIP	0uH			
FB105	1-414-226-21	INDUCTOR CHIP	0uH			
FB106	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB107	1-414-226-21	INDUCTOR CHIP	0uH			
FB109	1-414-226-21	INDUCTOR CHIP	0uH			
FB110	1-414-226-21	INDUCTOR CHIP	0uH			
FB111	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB112	1-414-226-21	INDUCTOR CHIP	0uH			
FB501	1-469-324-21	FERRITE	0uH			
FB502	1-469-324-21	FERRITE	0uH			
FB503	1-469-324-21	FERRITE	0uH			
FB504	1-469-324-21	FERRITE	0uH			
FB505	1-469-324-21	FERRITE	0uH			
FB506	1-469-324-21	FERRITE	0uH			
FB507	1-469-324-21	FERRITE	0uH			
FB508	1-216-797-11	METAL CHIP	10	5%	1/16W	
FB509	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB701	1-414-226-21	INDUCTOR CHIP	0uH			
FB702	1-414-226-21	INDUCTOR CHIP	0uH			
FB703	1-414-226-21	INDUCTOR CHIP	0uH			
FB704	1-414-226-21	INDUCTOR CHIP	0uH			
FB705	1-414-226-21	INDUCTOR CHIP	0uH			
FB706	1-414-226-21	INDUCTOR CHIP	0uH			
FB709	1-414-226-21	INDUCTOR CHIP	0uH			
FB707	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB708	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB710	1-414-226-21	INDUCTOR CHIP	0uH			(C660)
FB712	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB713	1-414-226-21	INDUCTOR CHIP	0uH			
FB714	1-414-226-21	INDUCTOR CHIP	0uH			
FB715	1-414-226-21	INDUCTOR CHIP	0uH			
FB716	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB717	1-414-226-21	INDUCTOR CHIP	0uH			(C670D/C675D)
FB801	1-414-226-21	INDUCTOR CHIP	0uH			
FB802	1-414-226-21	INDUCTOR CHIP	0uH			
FB803	1-414-226-21	INDUCTOR CHIP	0uH			
FB804	1-414-226-21	INDUCTOR CHIP	0uH			
FB805	1-414-226-21	INDUCTOR CHIP	0uH			
FB806	1-414-226-21	INDUCTOR CHIP	0uH			
FB807	1-414-226-21	INDUCTOR CHIP	0uH			
FB808	1-414-226-21	INDUCTOR CHIP	0uH			
FB809	1-414-226-21	INDUCTOR CHIP	0uH			
FB810	1-414-226-21	INDUCTOR CHIP	0uH			
FB811	1-414-226-21	INDUCTOR CHIP	0uH			
FB812	1-414-226-21	INDUCTOR CHIP	0uH			
FB813	1-414-226-21	INDUCTOR CHIP	0uH			
FB814	1-414-226-21	INDUCTOR CHIP	0uH			
FB815	1-414-226-21	INDUCTOR CHIP	0uH			
FB816	1-414-226-21	INDUCTOR CHIP	0uH			
FB817	1-414-226-21	INDUCTOR CHIP	0uH			
FB818	1-414-226-21	INDUCTOR CHIP	0uH			
FB819	1-414-226-21	INDUCTOR CHIP	0uH			
FB820	1-414-226-21	INDUCTOR CHIP	0uH			
		< FILTER >				
FL101	1-234-177-21	FILTER, CHIP EMI				
FL102	1-234-177-21	FILTER, CHIP EMI				
FL103	1-234-177-21	FILTER, CHIP EMI				
FL301	1-234-177-21	FILTER, CHIP EMI				
FL302	1-234-177-21	FILTER, CHIP EMI				
FL303	1-234-177-21	FILTER, CHIP EMI				
FL402	1-234-177-21	FILTER, CHIP EMI				
FL404	1-234-177-21	FILTER, CHIP EMI				
FL405	1-234-177-21	FILTER, CHIP EMI				
FL501	1-234-177-21	FILTER, CHIP EMI				

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Ref. No.	Part No.	Description			Remark
FL502	1-234-177-21	FILTER, CHIP EMI			
FL503	1-234-177-21	FILTER, CHIP EMI			
FL504	1-234-177-21	FILTER, CHIP EMI			
FL505	1-234-177-21	FILTER, CHIP EMI			
FL506	1-234-177-21	FILTER, CHIP EMI			
FL507	1-233-893-21	FILTER, CHIP EMI			
FL508	1-234-177-21	FILTER, CHIP EMI			
FL601	1-234-177-21	FILTER, CHIP EMI (C670D/C675D)			
FL701	1-234-177-21	FILTER, CHIP EMI (C670D/C675D)			
FL702	1-234-177-21	FILTER, CHIP EMI (C670D/C675D)			
FL801	1-234-177-21	FILTER, CHIP EMI			
		< IC >			
IC101	8-759-668-01	IC BR9040F-D-E2			
IC102	8-759-663-92	IC MB91107PFV-G-BND			
IC103	8-759-427-92	IC PST9126NL			
IC104	8-759-594-13	IC MBM29DL324BD-90PFTN			
IC105	8-759-667-86	IC CXD9572N-E2			
IC301	8-759-486-55	IC NJM2370U33-TE2			
IC302	8-759-666-84	IC CXD9576R			
IC303	8-759-643-10	IC GM71V18160CT-6TR			
IC401	8-759-660-88	IC LA6553-TE-L			
IC402	8-759-660-88	IC LA6553-TE-L			
IC403	8-759-338-78	IC BA10324AFV-E2			
IC404	8-759-660-87	IC CXD9569R			
IC502	8-752-399-55	IC CXD1932Q			
IC503	8-759-486-55	IC NJM2370U33-TE2			
IC504	8-759-573-19	IC MT48LC1M16A1TG-7S			
IC505	8-759-573-19	IC MT48LC1M16A1TG-7S			
IC506	8-759-669-28	IC PQ1R18			
IC601	8-759-663-93	IC CXD9549R (C670D/C675D)			
IC701	8-752-402-09	IC CXD1939R (C670D/C675D)			
IC802	8-759-641-58	IC KM29W16000AT-T			
IC803	8-759-670-51	IC CXD9568R-TBM			
		< RESISTOR >			
R002	1-216-801-11	METAL CHIP	22	5%	1/16W
R009	1-216-821-11	METAL CHIP	1K	5%	1/16W
R014	1-216-805-11	METAL CHIP	47	5%	1/16W
R015	1-216-809-11	METAL CHIP	100	5%	1/16W
R016	1-216-821-11	METAL CHIP	1K	5%	1/16W
R017	1-216-821-11	METAL CHIP	1K	5%	1/16W
R019	1-216-817-11	METAL CHIP	470	5%	1/16W
R101	1-216-833-91	RES-CHIP	10K	5%	1/16W
R102	1-216-833-91	RES-CHIP	10K	5%	1/16W
R103	1-216-833-91	RES-CHIP	10K	5%	1/16W
R104	1-216-801-11	METAL CHIP	22	5%	1/16W
R105	1-216-833-91	RES-CHIP	10K	5%	1/16W
R112	1-216-864-11	METAL CHIP	0	5%	1/16W
R113	1-216-797-11	METAL CHIP	10	5%	1/16W
R114	1-216-845-11	METAL CHIP	100K	5%	1/16W
R118	1-216-833-91	RES-CHIP	10K	5%	1/16W
R120	1-216-833-91	RES-CHIP	10K	5%	1/16W
R121	1-216-864-11	METAL CHIP	0	5%	1/16W
R123	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R124	1-216-817-11	METAL CHIP	470	5%	1/16W (C670D: AUS)
R124	1-216-837-11	METAL CHIP	22K	5%	1/16W (C670D: E)

Ref. No.	Part No.	Description			Remark
R125	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R126	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (C670D/C675D)
R126	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (C660)
R127	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R128	1-216-834-11	METAL CHIP	12K	5%	1/16W (C670D: AUS, E)
R129	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R130	1-216-833-91	RES-CHIP	10K	5%	1/16W
R131	1-216-833-91	RES-CHIP	10K	5%	1/16W
R136	1-216-833-91	RES-CHIP	10K	5%	1/16W
R138	1-216-797-11	METAL CHIP	10	5%	1/16W
R139	1-216-797-11	METAL CHIP	10	5%	1/16W
R140	1-216-797-11	METAL CHIP	10	5%	1/16W
R154	1-216-821-11	METAL CHIP	1K	5%	1/16W
R158	1-216-797-11	METAL CHIP	10	5%	1/16W
R159	1-216-821-11	METAL CHIP	1K	5%	1/16W
R161	1-216-833-91	RES-CHIP	10K	5%	1/16W
R164	1-216-821-11	METAL CHIP	1K	5%	1/16W
R166	1-216-833-91	RES-CHIP	10K	5%	1/16W
R167	1-216-833-91	RES-CHIP	10K	5%	1/16W
R168	1-216-833-91	RES-CHIP	10K	5%	1/16W
R169	1-216-833-91	RES-CHIP	10K	5%	1/16W
R170	1-216-833-91	RES-CHIP	10K	5%	1/16W
R171	1-216-833-91	RES-CHIP	10K	5%	1/16W
R172	1-216-833-91	RES-CHIP	10K	5%	1/16W
R173	1-216-833-91	RES-CHIP	10K	5%	1/16W
R174	1-216-833-91	RES-CHIP	10K	5%	1/16W
R175	1-216-833-91	RES-CHIP	10K	5%	1/16W
R176	1-216-833-91	RES-CHIP	10K	5%	1/16W
R184	1-216-801-11	METAL CHIP	22	5%	1/16W
R186	1-216-864-11	METAL CHIP	0	5%	1/16W
R187	1-216-833-91	RES-CHIP	10K	5%	1/16W
R188	1-216-833-91	RES-CHIP	10K	5%	1/16W
R195	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R301	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R302	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R303	1-218-883-11	METAL CHIP	33K	0.5%	1/16W
R304	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R305	1-216-838-11	METAL CHIP	27K	5%	1/16W
R306	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R307	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R309	1-216-809-11	METAL CHIP	100	5%	1/16W
R310	1-216-833-91	RES-CHIP	10K	5%	1/16W
R311	1-216-845-11	METAL CHIP	100K	5%	1/16W
R313	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R314	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R315	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R316	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R317	1-216-833-91	RES-CHIP	10K	5%	1/16W
R318	1-216-833-91	RES-CHIP	10K	5%	1/16W
R319	1-218-853-11	METAL CHIP	1.8K	0.5%	1/16W
R320	1-216-833-91	RES-CHIP	10K	5%	1/16W
R321	1-216-813-11	METAL CHIP	220	5%	1/16W
R327	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-216-801-11	METAL CHIP	22	5%	1/16W
R402	1-216-797-11	METAL CHIP	10	5%	1/16W
R403	1-216-797-11	METAL CHIP	10	5%	1/16W
R404	1-216-797-11	METAL CHIP	10	5%	1/16W
R405	1-216-797-11	METAL CHIP	10	5%	1/16W

Ref. No.	Part No.	Description			Remark
R406	1-216-797-11	METAL CHIP	10	5%	1/16W
R408	1-216-311-00	METAL CHIP	6.8	5%	1/10W
R409	1-216-797-11	METAL CHIP	10	5%	1/16W
R411	1-216-835-11	METAL CHIP	15K	5%	1/16W
R412	1-216-797-11	METAL CHIP	10	5%	1/16W
R415	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R416	1-216-847-11	METAL CHIP	150K	5%	1/16W
R417	1-216-843-11	METAL CHIP	68K	5%	1/16W
R418	1-216-847-11	METAL CHIP	150K	5%	1/16W
R419	1-216-835-11	METAL CHIP	15K	5%	1/16W
R420	1-216-835-11	METAL CHIP	15K	5%	1/16W
R423	1-216-833-91	RES-CHIP	10K	5%	1/16W
R424	1-216-844-11	METAL CHIP	82K	5%	1/16W
R425	1-216-845-11	METAL CHIP	100K	5%	1/16W
R426	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R427	1-216-835-11	METAL CHIP	15K	5%	1/16W
R436	1-216-833-91	RES-CHIP	10K	5%	1/16W
R443	1-216-844-11	METAL CHIP	82K	5%	1/16W
R444	1-216-843-11	METAL CHIP	68K	5%	1/16W
R445	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R446	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R447	1-216-835-11	METAL CHIP	15K	5%	1/16W
R448	1-216-835-11	METAL CHIP	15K	5%	1/16W
R449	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R450	1-216-833-91	RES-CHIP	10K	5%	1/16W
R451	1-216-821-11	METAL CHIP	1K	5%	1/16W
R454	1-216-311-00	METAL CHIP	6.8	5%	1/10W
R458	1-216-833-91	RES-CHIP	10K	5%	1/16W
R459	1-216-833-91	RES-CHIP	10K	5%	1/16W
R460	1-216-845-11	METAL CHIP	100K	5%	1/16W
R462	1-216-833-91	RES-CHIP	10K	5%	1/16W
R463	1-216-821-11	METAL CHIP	1K	5%	1/16W
R464	1-218-899-11	METAL CHIP	150K	0.5%	1/16W
R465	1-216-821-11	METAL CHIP	1K	5%	1/16W
R466	1-216-821-11	METAL CHIP	1K	5%	1/16W
R467	1-216-821-11	METAL CHIP	1K	5%	1/16W
R468	1-216-821-11	METAL CHIP	1K	5%	1/16W
R469	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R470	1-218-850-11	METAL CHIP	1.3K	0.5%	1/16W
R471	1-218-899-11	METAL CHIP	150K	0.5%	1/16W
R472	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R473	1-218-850-11	METAL CHIP	1.3K	0.5%	1/16W
R474	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R476	1-216-813-11	METAL CHIP	220	5%	1/16W
R477	1-216-821-11	METAL CHIP	1K	5%	1/16W
R478	1-216-836-11	METAL CHIP	18K	5%	1/16W
R479	1-216-836-11	METAL CHIP	18K	5%	1/16W
R480	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R481	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R482	1-216-803-11	METAL CHIP	33	5%	1/16W
R483	1-216-834-11	METAL CHIP	12K	5%	1/16W
R484	1-216-834-11	METAL CHIP	12K	5%	1/16W
R485	1-216-817-11	METAL CHIP	470	5%	1/16W
R486	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R487	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R488	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R489	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R490	1-216-817-11	METAL CHIP	470	5%	1/16W
R491	1-216-821-11	METAL CHIP	1K	5%	1/16W
R492	1-216-817-11	METAL CHIP	470	5%	1/16W
R493	1-216-817-11	METAL CHIP	470	5%	1/16W
R494	1-216-817-11	METAL CHIP	470	5%	1/16W
R496	1-216-821-11	METAL CHIP	1K	5%	1/16W
R497	1-216-821-11	METAL CHIP	1K	5%	1/16W
R501	1-216-809-11	METAL CHIP	100	5%	1/16W
R502	1-216-833-91	RES-CHIP	10K	5%	1/16W
R503	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R504	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R505	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R506	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R507	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R508	1-218-831-11	METAL CHIP	220	0.5%	1/16W
R512	1-216-864-11	METAL CHIP	0	5%	1/16W
R513	1-216-864-11	METAL CHIP	0	5%	1/16W
R514	1-216-864-11	METAL CHIP	0	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R516	1-216-864-11	METAL CHIP	0	5%	1/16W
R517	1-216-833-91	RES-CHIP	10K	5%	1/16W
R518	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R523	1-216-864-11	METAL CHIP	0	5%	1/16W
R524	1-216-864-11	METAL CHIP	0	5%	1/16W
R526	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R527	1-216-864-11	METAL CHIP	0	5%	1/16W
R529	1-216-833-91	RES-CHIP	10K	5%	1/16W
R530	1-216-833-91	RES-CHIP	10K	5%	1/16W
R540	1-216-864-11	METAL CHIP	0	5%	1/16W
R542	1-216-864-11	METAL CHIP	0	5%	1/16W
R603	1-216-809-11	METAL CHIP	100	5%	1/16W (C670D/C675D)
R605	1-216-864-11	METAL CHIP	0	5%	1/16W (C670D/C675D)
R701	1-216-864-11	METAL CHIP	0	5%	1/16W (C660)
R710	1-216-864-11	METAL CHIP	0	5%	1/16W (C670D/C675D)
R711	1-216-864-11	METAL CHIP	0	5%	1/16W (C670D/C675D)
R712	1-216-833-91	RES-CHIP	10K	5%	1/16W (C670D/C675D)
R714	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R715	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R719	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R720	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R721	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R722	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R723	1-216-809-11	METAL CHIP	100	5%	1/16W (C670D/C675D)
R724	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R725	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R727	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R728	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)
R729	1-216-841-11	METAL CHIP	47K	5%	1/16W (C670D/C675D)

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Ref. No.	Part No.	Description			Remark
R731	1-216-864-11	METAL CHIP	0	5% 1/16W (C670D/C675D)	
R733	1-216-841-11	METAL CHIP	47K	5% 1/16W (C670D/C675D)	
R750	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R751	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R752	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R753	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R754	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R755	1-216-864-11	METAL CHIP	0	5% 1/16W (C660)	
R801	1-216-833-91	RES-CHIP	10K	5% 1/16W	
R805	1-216-833-91	RES-CHIP	10K	5% 1/16W	
R806	1-216-833-91	RES-CHIP	10K	5% 1/16W	
R807	1-216-833-91	RES-CHIP	10K	5% 1/16W	
R809	1-216-833-91	RES-CHIP	10K	5% 1/16W	
R826	1-216-809-11	METAL CHIP	100	5% 1/16W	
		< COMPOSITION CIRCUIT BLOCK >			
* RB101	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV501	1-223-583-11	RES, ADJ, CARBON 1K			
		< VIBRATOR >			
X101	1-781-185-21	VIBRATOR, CERAMIC (12.5MHz)			
X102	1-781-950-11	VIBRATOR, CRYSTAL (27MHz)			
*	1-468-511-11	POWER BLOCK (MPW1240) (C660/C670D: US, CND)			
		********** (Ref. No. 5,000 Series)			
		< CAPACITOR >			
C5	9-885-006-64	ELECT	220uF	200V	
C101	9-885-006-67	ELECT	330uF	35V	
C111	9-885-006-66	ELECT	33uF	35V	
C301	9-885-006-65	ELECT	680uF	25V	
C306	9-885-006-66	ELECT	33uF	35V	
C307	9-885-006-66	ELECT	33uF	35V	
C401	9-885-006-67	ELECT	330uF	35V	
		< DIODE >			
D4	8-719-901-33	DIODE 1SS133			
D5	8-719-063-16	DIODE HZS9 B2			
D6	8-719-901-33	DIODE 1SS133			
D7	8-719-901-33	DIODE 1SS133			
D11	8-719-054-32	DIODE ERA15-06			
D12	8-719-054-32	DIODE ERA15-06			
D13	8-719-054-32	DIODE ERA15-06			
D14	8-719-054-32	DIODE ERA15-06			
D21	8-719-901-33	DIODE 1SS133			

Ref. No.	Part No.	Description	Remark
D22	8-719-901-33	DIODE 1SS133	
D101	8-719-210-51	DIODE 21DQ10	
D102	8-719-063-04	DIODE HZS7A2	
D103	9-885-006-59	DIODE HZ-18CP	
D104	8-719-901-33	DIODE 1SS133	
D110	8-719-901-33	DIODE 1SS133	
D205	8-719-901-33	DIODE 1SS133	
D301	9-885-006-58	DIODE ERB63-006	
D302	9-885-006-58	DIODE ERB63-006	
D401	8-719-210-51	DIODE 21DQ10	
D402	8-719-063-04	DIODE HZS7A2	
D404	8-719-901-33	DIODE 1SS133	
D410	8-719-901-33	DIODE 1SS133	
		< FUSE >	
⚠F1	1-533-418-11	FUSE (2.5A/125V)	
		< IC >	
IC302	8-759-234-89	IC TA76431S	
IC303	8-759-651-05	IC TA76431AS	
		< IC LINK >	
⚠P301	1-533-593-11	LINK, IC (2A)	
⚠P302	1-533-592-11	LINK, IC (1.6A)	
		<PHOTO COUPLER >	
⚠PC1	9-885-006-57	PHOTO COUPLER PC817	
		< TRANSISTOR >	
Q1	9-885-006-63	TRANSISTOR 2SK2638	
Q2	9-885-006-61	TRANSISTOR 2SC1741AS	
Q101	9-885-006-60	TRANSISTOR 2SB1642	
Q102	8-729-920-70	TRANSISTOR 2SC1740S	
Q103	8-729-920-70	TRANSISTOR 2SC1740S	
Q104	8-729-920-68	TRANSISTOR 2SA933S	
Q201	9-885-006-62	TRANSISTOR 2SJ525	
Q301	9-885-006-60	TRANSISTOR 2SB1642	
Q302	8-729-920-70	TRANSISTOR 2SC1740S	
Q303	8-729-920-70	TRANSISTOR 2SC1740S	
Q304	8-729-920-68	TRANSISTOR 2SA933S	
Q401	8-729-018-60	TRANSISTOR 2SD2012	
Q402	8-729-920-68	TRANSISTOR 2SA933S	
Q403	8-729-920-68	TRANSISTOR 2SA933S	
Q404	8-729-920-70	TRANSISTOR 2SC1740S	
		< SWITCH >	
⚠SW1	9-885-006-69	SWITCH, KEYBOARD (ⓘ)	
		< TRANSFORMER >	
T1	9-885-006-68	TRANSFORMER, DC-DC CONVERTER	

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Ref. No.	Part No.	Description			Remark
*	1-468-511-21	POWER BLOCK (MPW1311) (C670D: AUS, E/C675D) ********** (Ref. No. 6,000 Series)			
		< CAPACITOR >			
C5	9-885-006-73	ELECT	150uF		400V
C101	9-885-006-67	ELECT	330uF		35V
C111	9-885-006-66	ELECT	33uF		35V
C301	9-885-006-65	ELECT	680uF		25V
C306	9-885-006-66	ELECT	33uF		35V
C307	9-885-006-66	ELECT	33uF		35V
C410	9-885-006-67	ELECT	330uF		35V
		< DIODE >			
D4	8-719-901-33	DIODE 1SS133			
D5	8-719-063-16	DIODE HZS9B2			
D6	8-719-901-33	DIODE 1SS133			
D7	8-719-901-33	DIODE 1SS133			
D11	8-719-054-32	DIODE ERA15-06			
D12	8-719-054-32	DIODE ERA15-06			
D13	8-719-054-32	DIODE ERA15-06			
D14	8-719-054-32	DIODE ERA15-06			
D23	8-719-901-33	DIODE 1SS133			
D24	8-719-901-33	DIODE 1SS133			
D25	8-719-901-33	DIODE 1SS133			
D26	8-719-062-83	DIODE HZS4C2			
D71	8-719-063-58	DIODE HZS27-2			
D72	8-719-063-58	DIODE HZS27-2			
D101	8-719-210-51	DIODE 21DQ10			
D102	8-719-063-04	DIODE HZS7A2			
D103	9-885-006-59	DIODE HZ-18CP			
D104	8-719-901-33	DIODE 1SS133			
D110	8-719-901-33	DIODE 1SS133			
D205	8-719-901-33	DIODE 1SS133			
D301	9-885-006-58	DIODE ERB83-006			
D302	9-885-006-58	DIODE ERB83-006			
D313	8-719-901-33	DIODE 1SS133			
D401	8-719-210-51	DIODE 21DQ10			
D402	8-719-063-04	DIODE HZS7A2			
D404	8-719-901-33	DIODE 1SS133			
D410	8-719-901-33	DIODE 1SS133			
		< FUSE >			
⚠F1	1-576-229-11	FUSE (2.5A/250V)			
		< IC >			
IC302	8-759-234-89	IC TA76431S			
IC303	8-759-651-05	IC TA76431AS			
		< IC LINK >			
⚠P301	1-533-593-11	LINK, IC (2A)			
⚠P302	1-533-592-11	LINK, IC (1.6A)			
		< PHOTO COUPLER >			
⚠PC1	9-885-006-70	PHOTO COUPLER PC123			
⚠PC2	9-885-006-70	PHOTO COUPLER PC123			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q1	9-885-006-72	TRANSISTOR	2SK2717		
Q2	9-885-006-61	TRANSISTOR	2SC1741AS		
Q20	8-729-920-68	TRANSISTOR	2SA933S		
Q71	9-885-006-71	TRANSISTOR	2SB1488		
Q101	9-885-006-60	TRANSISTOR	2SB1642		
Q102	8-729-920-70	TRANSISTOR	2SC1740S		
Q103	8-729-920-70	TRANSISTOR	2SC1740S		
Q104	8-729-920-68	TRANSISTOR	2SA933S		
Q201	9-885-006-62	TRANSISTOR	2SJ525		
Q301	9-885-006-60	TRANSISTOR	2SB1642		
Q302	8-729-920-70	TRANSISTOR	2SC1740S		
Q303	8-729-920-70	TRANSISTOR	2SC1740S		
Q304	8-729-920-68	TRANSISTOR	2SA933S		
Q401	8-729-018-60	TRANSISTOR	2SD2012		
Q402	8-729-920-68	TRANSISTOR	2SA933S		
Q403	8-729-920-68	TRANSISTOR	2SA933S		
Q404	8-729-920-70	TRANSISTOR	2SC1740S		
		< SWITCH >			
⚠SW1	9-885-006-69	SWITCH, KEYBOARD (ⓘ)			
		< TRANSFORMER >			
⚠T1	9-885-006-74	TRANSFORMER, DC-DC CONVERTER			
*	A-6065-505-A	SE-110 BOARD, COMPLETE ********** (Ref. No. 3,000 Series)			
		< CAPACITOR >			
C501	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
* CN501	1-568-944-11	PIN, CONNECTOR 6P			
CN502	1-573-383-11	PIN, CONNECTOR (PC BOARD) 2P			
		< SHORT >			
JR501	1-216-295-91	SHORT	0		
		< PHOTO INTERRUPTER >			
PH501	8-749-924-30	PHOTO REFLECTOR GP2S28 (DISC PRESENCE DETECTION SENSOR)			
PH502	8-749-924-18	PHOTO INTERRUPTER RPI-1391 (TURN TABLE POSITION DETECTION SENSOR)			
		< TRANSISTOR >			
Q501	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
		< RESISTOR >			
R501	1-216-075-00	METAL CHIP	12K	5%	1/10W
R502	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R503	1-216-049-91	RES-CHIP	1K	5%	1/10W
R504	1-216-027-00	METAL CHIP	120	5%	1/10W
R505	1-216-047-91	RES-CHIP	820	5%	1/10W

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Ref. No.	Part No.	Description			Remark
*	A-6065-503-A	SW-338 BOARD, COMPLETE			
		**********			
					(Ref. No. 4,000 Series)
		< CONNECTOR >			
* CN301	1-568-942-11	PIN, CONNECTOR 4P			
		< RESISTOR >			
R304	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R305	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R308	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R309	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
		< SWITCH >			
S301	1-771-349-21	SWITCH, KEYBOARD (RETURN)			
S302	1-771-349-21	SWITCH, KEYBOARD (DVD MENU)			
S303	1-771-349-21	SWITCH, KEYBOARD (TITLE)			
S304	1-771-349-21	SWITCH, KEYBOARD (LOAD)			
S305	1-771-349-21	SWITCH, KEYBOARD (1/ALL)			
S306	1-771-349-21	SWITCH, KEYBOARD (REPEAT)			
S307	1-771-349-21	SWITCH, KEYBOARD (SHUFFLE)			
*	A-6065-492-A	TK-57 BOARD, COMPLETE			
		**********			
					(Ref. No. 3,000 Series)
		< CAPACITOR >			
C004	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C005	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C006	1-124-779-00	ELECT CHIP	10uF	20%	16V
C007	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C008	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C009	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C010	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C011	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C012	1-124-779-00	ELECT CHIP	10uF	20%	16V
C013	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C014	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C015	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C016	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C017	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V
C018	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C019	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V
C020	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C021	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C022	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C023	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C024	1-164-730-11	CERAMIC CHIP	0.0012uF	10%	50V
C025	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C026	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C027	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C029	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C030	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C031	1-124-779-00	ELECT CHIP	10uF	20%	16V
C032	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C033	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C034	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C035	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C036	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C037	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C038	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C039	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C040	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C041	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C043	1-117-681-21	ELECT CHIP	100uF		6.3V
					(suffix-12)
		< CONNECTOR >			
CN001	1-785-700-21	CONNECTOR, FPC (ZIF) 23P			
CN002	1-566-529-11	CONNECTOR, FPC (ZIF) 13P			
CN003	1-779-344-11	CONNECTOR, FFC/FPC 20P			
CN004	1-778-331-11	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D003	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC001	8-759-567-24	IC SSI33P3722			
		< COIL >			
L001	1-412-031-11	INDUCTOR CHIP	47uH		
		< TRANSISTOR >			
Q001	8-729-903-46	TRANSISTOR	2SB1132-T100-QR		
Q002	8-729-402-42	TRANSISTOR	UN5213-TX		
		< RESISTOR >			
R001	1-216-815-11	METAL CHIP	330	5%	1/16W
R002	1-216-809-11	METAL CHIP	100	5%	1/16W
R003	1-216-809-11	METAL CHIP	100	5%	1/16W
R004	1-216-837-11	METAL CHIP	22K	5%	1/16W
R005	1-216-013-00	METAL CHIP	33	5%	1/10W
R006	1-216-013-00	METAL CHIP	33	5%	1/10W
R007	1-216-841-11	METAL CHIP	47K	5%	1/16W
R008	1-216-797-11	METAL CHIP	10	5%	1/16W
R009	1-216-834-11	METAL CHIP	12K	5%	1/16W
R015	1-216-833-91	RES-CHIP	10K	5%	1/16W
R016	1-216-833-91	RES-CHIP	10K	5%	1/16W
R017	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R018	1-216-833-91	RES-CHIP	10K	5%	1/16W
R022	1-216-811-11	METAL CHIP	150	5%	1/16W
R023	1-216-820-11	METAL CHIP	820	5%	1/16W
R025	1-216-813-11	METAL CHIP	220	5%	1/16W
		MISCELLANEOUS			
		**********			
⚠11	1-782-960-11	CORD, POWER (C670D: E/C675D)			
⚠11	1-783-531-31	CORD, POWER (C660/C670D: US, CND)			
⚠11	1-790-588-11	CORD, POWER (C670D: AUS)			
12	1-792-869-11	CABLE, FLEXIBLE FLAT (FAC-003)			
15	1-792-866-11	CABLE, FLEXIBLE FLAT (FAH-002)			
					(C670D/C675D)

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Ref. No.	Part No.	Description	Remark
19	1-792-870-11	CABLE, FLEXIBLE FLAT (FMA-002)	
21	1-792-864-11	CABLE, FLEXIBLE FLAT (FAF-001)	
27	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
29	1-792-865-11	CABLE, FLEXIBLE FLAT (FAH-001)	(C670D/C675D)
69	1-771-913-11	SWITCH, TACTILE	
103	1-792-868-11	CABLE, FLEXIBLE FLAT (FAF-003)	
104	1-792-867-11	CABLE, FLEXIBLE FLAT (FAF-002)	
163	1-466-996-21	ENCODER, ROTARY (LOADING)	
174	1-792-871-11	CABLE, FLEXIBLE FLAT (FMT-002)	
179	1-792-872-11	CABLE, FLEXIBLE FLAT (FMT-003)	
⚠181	A-6062-397-A	OPTICAL PICK-UP KHM-220AAA/J1RP1	
M201	A-4660-977-A	MOTOR ASSY, LOADING	
M951	A-6062-080-A	MOTOR ASSY, ROTARY (TURN TABLE)	

****
HARDWAE LIST
****

#1	7-685-648-79	SCREW (M3X12), TAPPING	
#2	7-685-902-21	SCREW +PTPWH 2.6X8 (TYPE2)	
#3	7-621-773-93	SCREW +B 2.6X3	

ACCESSORIES & PACKING MATERIALS
****

	1-418-989-61	COMMANDER, STANDARD (RMT-D121A)	(C670D: US, CND, E/C675D)
	1-418-989-71	COMMANDER, STANDARD (RMT-D121O)	(C670D: AUS)
	1-418-991-71	COMMANDER, STANDARD (RMT-D119A)	(C660)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P	(C670D: E/C675D)
	1-575-334-11	CORD, CONNECTION (STEREO AV CABLE 1.5m)	(C660/C670D: AUS, E)
	1-575-335-21	CORD, CONNECTION (S-VIDEO CABLE 1.5m)	
	1-790-938-11	CORD, CONNECTION (S-LINK CABLE 1.5m)	(C670D: US, CND/C675D)
	3-062-341-11	MANUAL, INSTRUCTION (ENGLISH) (C660)	
	3-062-341-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	(C660: CND)
	3-062-342-11	MANUAL, INSTRUCTION (ENGLISH)	(C670D: US, CND/C675D)
	3-062-342-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	(C670D: CND)
	3-062-342-31	MANUAL, INSTRUCTION (SPANISH)	(C670D: E)
	3-062-342-41	MANUAL, INSTRUCTION (ENGLISH)	(C670D: AUS)
	3-053-633-01	COVER, BATTERY (for RMT-D119A)	
	3-709-493-01	COVER, BATTERY (for RMT-D121A/D121O)	

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